Pohybové ústrojí

Pokroky ve výzkumu, diagnostice a terapii

The 18th Prague-Lublin-Sydney-St Petersburg Symposium

Congenital and acquired disorders of growing skeleton

21th – 25th September 2016
Zwierzyniec (guest house "Zacisze")
District Zamość | Poland

Vydává
Společnost pro pojivové tkáně ČLS J. E. Purkyně z.s.
Odborná společnost ortopedicko-protetická ČLS J. E. Purkyně z.s.
Ambulantní centrum pro vady pohybového aparátu, s.r.o.

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POHYBOVÉ ÚSTROJÍ

ročník 23, 2016, číslo 1+2

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& Ambulantní centrum pro vady pohybového aparátu, s. r. o.
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LOCOMOTOR SYSTEM

Advances in Research, Diagnostics and Therapy

Published by The Society for Connective Tissues, Czech Medical Association of J. E. Purkyně, Prague, Society for Prosthetics and Orthotics, Czech Medical Association of J. E. Purkyně, Prague, Czech Republic and Ambulant Centre for Defects of Locomotor Apparatus Prague, Czech Republic

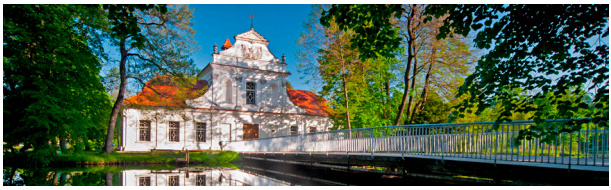
Call for papers

Support this journal by sending in your best and most interesting papers. The issue of the journal is published during whole year after proof acception of the revieweres. In occasion of the symposia (twice a year) is published the supplement.

Submitted papers: Locomotor System will review for publication manuscripts engaged in diagnostics and interdisciplinary treatment of genetic and metabolic skeletal disorders, limb anomalies, secondary osteoporosis, osteo/spondyloarthritis and another disorders that negatively influence development and quality of locomotor appartus during human life. Both papers on progress in research of connective tissue diagnostics, medical and surgical therapy of multiple congenital abnormalities of skeleton mainly in the fields of paediatric orthopaedic surgery and plastic surgery, orthotics and prosthetics treatment, and papers dealing with biomechanics, clinical anthropology and paleopathology are appreaciated.

The journal has an interdisciplinary character which gives possibilities for complex approach to the problematics of locomotor system. The journal belongs to clinical, preclinical and theoretical medical branches which connect various up-to-date results and discoveries concerned with locomotor system. You can find the volumes of Locomotor System journal at http://www.pojivo.cz/cz/pohybove-ustroji/ since 1997 (free of charge). Since 2013 only electronic edition of the journal is available. That is why we recommend to all subscribers and those interested apply at http://www.pojivo.cz/en/newsletter, enter personal data, titles and e-mail address where the journal will be mailed.

Abstracts of presented papers are excerpted in EMBASE/Excerpta Medica (from the year 1994) and in the Bibliographia medica Čechoslovaca (from the year 2010). We prefer the manuscripts to be prepared according to Uniform Requirements for Manuscripts Submitted to Biomedical Journals (Vancouver Declaration, Brit med J 1988; 296, p. 401-405).



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& Society for Prosthetics and Orthotics CMA J.E. Purkynje
& Czech Society of Biomechanics
& Czech Medical Association J.E. Purkynje
& Medical University of Lublin
& Vincent Pol University in Lublin
& Children's Rehabilitation Center of Orthopedics and Traumatology
"Ogonyok" St. Petersburg, Russia

invite you for

THE 18TH PRAGUE-LUBLIN-SYDNEY-ST. PETERSBURG SYMPOSIUM

interdisciplinary approach to

CONGENITAL AND ACQUIRED DISORDERS OF GROWING SKELETON

The Symposium will be held under the auspices of

Professor Tomasz Karski, MD, PhD

Emeritus chief of the Pediatric Orthopedic and Rehabilitation Department of Medical University in Lublin, Poland

The Symposium will be held in Zwierzyniec (guest house "Zacisze"), District Zamość, Poland,
21st–25th September 2016

SYMPOSIUM PROGRAMME

WEDNESDAY, SEPTEMBER 21, 2016

Arrival to Zwierzyniec (Address: guest house "Zacisze" Rudka Street 5B).
Zwierzyniec is placed 25 km to the west from Zamość, 18 km easterly to Biłgoraj or 100 km to the south of Lublin

19.30 CELEBRATING SUPPER

THURSDAY, SEPTEMBER 22, 2016

7.30 – 8.30 BREAKFAST

9.00 REGISTRATION OF PARTICIPANTS
Note: Symposium fee is 50 Euros - it contains all social and leisure activities

10.00 OPENING OF THE SYMPOSIUM

WELCOME SPEECHES

Professor Tomasz Karski

Professor Mikhail Dudin

Professor Ivo Marik

Mgr Jan Skiba – mayor of town Zwierzyniec: History of the town

Music Team from Zwierzyniec

11.00 – 14.00 **SESSIONS I**

SPINE DISORDERS – PATHOGENESIS, DIAGNOSIS AND TREATMENT

Chairmen: KARSKI TOMASZ, DUDIN MIKHAIL, MARIK IVO

Dudin Mikhail Georgiyevich, Khaimina Tatiana Vladimirovna, Avaliani Tatiana Varlaamovna, Pinchuk Dmitry Yuryevich (St. Petersburg, Russia)
The role of factors of pose assymetry in the process of transition of a healthy spine into a scoliotic one
Children's Rehabilitation Center of Orthopaedics and Traumatology «Ogonyok», St. Petersburg, Russia

Dudin Mikhail Georgiyevich (St. Petersburg, Russia)
Ideology of conservative treatment of AIS in Children's Rehabilitation Center of Orthopedics and Traumatology "Ogonyok"
Children's Rehabilitation Center of Orthopaedics and Traumatology «Ogonyok», St. Petersburg, Russia

COFFEE BREAK

Dudin Mikhail Georgiyevich (St. Petersburg, Russia)
Prevention of AIS as a pathological 3D deformation of the spine.
Children's Rehabilitation Center of Orthopaedics and Traumatology «Ogonyok», St. Petersburg, Russia

Rybka Dina Olegovna, Dudin Mikhail Georgiyevich (St. Petersburg, Russia)
Ultrasound of paravertebral muscles in adolescent idiopathic scoliosis (AIS)
Children's Rehabilitation Center of Orthopaedics and Traumatology «Ogonyok», St. Petersburg, Russia

Cerny Pavel[1,2)], Stolinski Lukasz[3,4,5)], Drnkova Jana[2)], Czaprowski Darius[7)], Kosteas, Andreas[2)], Marik Ivo[1,6)] (Prague, Czech Republic)
Skeletal Deformities Measurements of X-ray Images and Photos on the Computer
[1)] Faculty of Health Care Studies, West Bohemia University, Pilsen, Czech Republic
[2)] ORTOTIKA, l.l.c., Prague, Czech Republic
[3)] Rehasport Clinic, Poznan, Poland
[4)] Spine Disorders and Pediatric Orthopedics Department, University of Medical Sciences, Poznan, Poland
[5)] The Institute fighting with pain, Rehasport Clinic Licensed Rehabilitation Center, Skierniewice, Poland
[6)] Ambulant Centre for Defects of Locomotor Apparatus l.l.c., Prague, Czech Republic
[7)] Department of Physiotherapy, Józef Rusiecki University College, Olsztyn, Poland

FAMILY PHOTO OF PARTICIPANTS

14.00 LUNCH BREAK

15.00–18.00 **SESSION II**

SPINE DISORDERS – PATHOGENESIS, DIAGNOSIS AND TREATMENT – VARIA

Chairmen: KARSKI JACEK, KOLESNICHENKO VERA, ZEMKOVA DANIELA

Jung Michael[1)], Landenberger M[2)], Jung T[3)], Lindenthal T[4)], Philippi[5)] (Frankfurt (Main), Germany)
Infantile postural asymmetry and physical therapy – a randomized controlled trial
[1)] Carl Remigius Medical School, Frankfurt (Main), Germany
[2)] Medical Faculties, Martin Luther University Halle-Wittenberg, Germany
[3)] Johannes Gutenberg University Mainz, Germany
[4)] Clementine Children`s Hospital Frankfurt (Main), Germany
[5)] Center of Developmental Neurology Frankfurt (Main), Germany

Kolesnichenko Vera Anatolyevna, Litvinenko Konstantin Nikolayevich /Kharkov, Ukraine/
Mechanisms of regulation of vertical posture in asymptomatic volunteers and in patients with lumbar disc degeneration disease
SI "Sytenko Institute of Spine and Joint Pathology National Academy of Medical Sciences of Ukraine", Kharkov, Ukraine

COFFEE BREAK

Chairmen: KARSKI JACEK, PAŘÍZKOVÁ JANA, KARSKI TOMASZ

Karski Jacek[1)], Karski Tomasz[2)] (Lublin, Poland)
Knee problems connected with incorrect seating position. A case report
[1)] Pediatric Orthopedic and Rehabilitation Department of Medical University in Lublin
[2)] Vincent Pol University in Lublin, Poland

Karski Tomasz[1)], Karski Jacek[2)] (Lublin, Poland)
Talo-crural joint (ankle joint) insufficiency and pain in the left leg of drivers – and in the right leg of the passengers. A case report
[1)] Vincent Pol University in Lublin, Poland
[2)] Pediatric Orthopedic and Rehabilitation Department of Medical University in Lublin

Karski Jacek[1)], Karski Tomasz[2)] (Lublin, Poland)

Deformations of the feet, knees, hips, and pelvis in children with Minimal Brain Dysfunction (MBD). Causes. Treatment. Prophylactics.

[1)] Pediatric Orthopedic and Rehabilitation Department of Medical University in Lublin
[2)] Vincent Pol University in Lublin, Poland

Domagała Marian[1)], Karski Tomasz[2)], Karski Jacek[3)], Żaroffe Bernard[1)], Stokowska-Wojda Małgorzata[1)], Kowalska Magdalena[1)] (Laszczów & Lublin, Poland)

Status of locomotors system in the patients from the villages region from south east region of Poland

[1)] Medical Center in Laszczów (Director of Center Dr Marian Domagała), Poland
[2)] Vincent Pol University in Lublin, Poland
[3)] Pediatric Orthopedic and Rehabilitation Department of Medical University in Lublin

Kędzierski Zbigniew, Karski Tomasz, Słowińska Beata, Kowalska Agata, Boryga Bartosz (Lublin, Poland)

Health condition of the population of Poland: a study based on the example of orthopedic patients attending the Rehabilitation Out-Patients Department of the Military Hospital in Lublin in years 2013–2015

1st Clinical Military Hospital and Policlinic in Lublin, Poland

19.00 – SUPPER

FRIDAY, SEPTEMBER 23, 2016

7.30–8.30 BREAKFAST

9.00–14.00 **SESSION III**

DISORDERS OF GROWING SKELETON – ORTHOPAEDIC ANTHROPOLOGY – BIOMECHANICS – VARIA

Chairmen: ZEMKOVA DANIELA, KARSKI JACEK, MARIK IVO

Marik Ivo
65th anniversary of RNDr. Daniela Zemkova, PhD

Zemková Daniela[3,1)], Myslivec Radek[4,1)], Petrasova Sarka[1)], Valesova Monika[2)], Firytova Rita[2)], Marik Ivo[2,1)] (Prague & Pilsen, Czech Republic)
Drilling epiphysiodesis as a method of choice for knee deformity and lower limb discrepancy correction – long term results
[1)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[2)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic
[3)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
[4)] Orthopaedic and Traumatology Department, Hospital Pribram, Czech Republic

Petrasova Sarka[1)], Zemkova Daniela[1,3)], Myslivec Radek[4,1)], Marik Ivo[2,1)] (Prague & Pilsen, Czech Republic)
Hemi-epiphysiodesis as a suitable method also for crura vara in achondroplasia and hypochondroplasia: two case reports
[1)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[2)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
[3)] Orthopaedic and Traumatology Department, Hospital Pribram, Czech Republic
[4)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic

Marik Ivo[1,2)], Myslivec Radek[4,1)], Petrasova Sarka[1)], Marikova Alena[1)], Zemkova Daniela[3,1)] (Prague & Pilsen, Czech Republic)
Partial and total epiphysiodesis as a part of reconstructive surgery in severe limb deformities
[1)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[2)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic
[3)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
[4)] Orthopaedic and Traumatology Department, Hospital Pribram, Czech Republic

Zemková Daniela[3,1)], Marikova Alena[1)], Marik Ivo[2,1)], (Prague & Pilsen, Czech Republic)
Drilling epiphysiodesis as a method of choice for bilateral leg overgrowth: a case report
[1)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[2)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic
[3)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic

COFFEE BREAK

Chairmen: ALAMELDIN MOHAMED, KUKLIK MILOSLAV, SAKALOUSKI ALEH

Alam Eldin Mohamed (Sohag, Egypt)
Long term functional outcome and complication of using liquid nitrogen freezing for reconstruction of lower limb osteosarcoma in children
Sohag Faculty of Medicine, Sohag, Egypt

Beletski Aleksandr, Shpileuski Ihar, Sakalouski Aleh (Minsk, Belarus)
Surgical Treatment of Intraosseous Benign Bone Neoplasms of the Extremities in Children and Adolescents
Belarusian Research Center of Traumatology and Orthopedics, Minsk, Belarus

Kuklik Miloslav[4)], Marik Ivo[1,2)], Zemkova Daniela[2,3)], Krepelová Anna[5)], Kozlowski Kazimierz[6)], Povysil Ctibor[7)] (Prague, Czech Republic)
Diastrophic dysplasia: review and a case report
[1)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[2)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic
[3)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
[4)] Genetic Dept.; Czech Republic, Prague 3; Czech Republic
[5)] Dept. of molecular genetics, Institute of biology and medical genetics, University Hospital Motol; Prague; Czech Republic
[6)] New Children Hospital, Westmead, Sydney
[7)] Institute of Pathology, 1st Faculty of Medicine, Charles University, Prague, Czech Republic

Kwiatkowski M[1)], Guszczyn T[1)], Maksimowicz M[1)], Milewski R[2)], Popko J[1)] (Bialystok, Poland)
Evaluation of patients with idiopathic scoliosis treated with thoracolumbar brace
[1)] Department of PaediatricOrthopaedics and Traumatology, Białystok, Poland.
[2)] Department of Statistics and Medical Informatics, Białystok, Poland.

Sakalouski Aleh (Minsk, Belarus)
Results of Triple Pelvic Osteotomy in Children with Perthes Disease
State Institution "Republican Scientific and Practical Centre of Traumatology and Orthopedics", Minsk, Belarus

14.00 LUNCH BREAK

15.00–17.00 **SESSION IV**

DISORDERS OF GROWING SKELETON – SURGERY OF CHILDREN HIPS – ORTHOPAEDIC ORTHOTISTS – BIOMECHANICS

Chairmen: SAKALOUSKI ALEH, KRAWCZYK PETR, KARSKI TOMASZ

Krawczyk Petr (Ostrava, Czech Republic)
Indications of trunk and extremity orthoses in clinical practice
PROTEOR CZ l.l.c , Ostrava, Czech Republic

Krawczyk Petr (Ostrava, Czech Republic)
Indications of lower and upper limb prostheses
PROTEOR CZ l.l.c , Ostrava, Czech Republic

Sakalouski Aleh (Minsk, Belarus)
Long-term Results of Posterior Femoral Rotational Osteotomy at Children with DDH
State Institution "Republican Scientific and Practical Centre of Traumatology and Orthopedics", Minsk, Belarus

Sakalouski Aleh (Minsk, Belarus)
Results of Posterior Rotational Femur Osteotomy in Children with Postseptic Hip Deformity
State Institution "Republican Scientific and Practical Centre of Traumatology and Orthopedics", Minsk, Belarus

POSTERS – VARIA

Petrtyl Miroslav[1)], Balik Karel[2)], Povysil Ctibor[3)], Zaloudkova Margit[2)] (Prague, Czech Republic)
Submicrostructural domains of the human femoral compact bone
[1)] Czech Technical University, FCE, Department of Mechanics, Laboratory of Biomechanics and Biomaterial Engineering, Prague, Czech Republic
[2)] Dept. of Composites and Carbon Materials, Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, Prague, Czech Republic
[3)] Institute of Pathology, 1st Faculty of Medicine, Charles University, Prague, Czech Republic

Arsenev Aleksey Valentinovich[1)], Baloshin Yuriy Aleksandrovich[3)], Vasilevich SergeyViktorovich[3)], Dudin Mikhail Georgiyevich[1)], Kipke M.V.[2)], Sorokin A.A.[2)], Sukhov T.M.[2)], Sukhova M.A.[3)]
(St. Petersburg, Russia)

Hardware-software method for postural abnormalities and spine deformities diagnosis based on digital PHOTO analysis

[1] SFHI Children's Rehabilitation Center of Orthopaedics and Traumatology „Ogonek",
[2] FSBEI HE Baltic State Technical University „Voenmeh" Named after D.F. Ustinov
[3] LLC „Smart-Orto", St. Petersburg, Russia

17.00–18.30 SOCIAL PROGRAM: NATURE MUSEUM IN ZWIERZYNIEC. BUS TRANSPORT.

19.00 SUPPER (AS CONTINUATION – GRILL WITH BEER, MUSIC TEAM FROM ZWIERZYNIEC)

FAMILY PHOTO OF PARTICIPANTS

SATURDAY, SEPTEMBER 24, 2016

7.30–8.30 BREAKFAST

9.00–11.00 **SESSION V**

DISORDERS OF GROWING SKELETON – VARIA

Chairmen: ZEMKOVA DANIELA, PARIZKOVÁ JANA, KARSKI JANUSZ

Zemkova Daniela, Hudakova Olga (Prague, Czech Republic)
Orthopaedic anthropology: Why we walk or why we use bipedal locomotion
[1] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
[2] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic

Parizkova Jana
Problems of pain of locomotor system in the obese
Obesity Management Centre, Institute of Endocrinology, Prague, Czech Republic

Karski Tomasz[1)], Karski Jacek[2)], Karski Janusz[3)], Kulka Małgorzata[4)] (Lublin, Poland)
Problem of the feet. Flexions test in diagnosis of "the sensible and painful foot". Physiotherapy. Prophylaxis

[1)] Vincent Pol University in Lublin, Poland
[2)] Pediatric Orthopedic and Rehabilitation Department of Medical University in Lublin
[3)] Children Sanatorium in Krasnobród / Orthopedic Rehabilitation Ward
[4)] Neurology Department of Medical University in Lublin

Karski Tomasz, Karski Janusz, Żurakowski Wojciech (Krasnobród, Poland)
„History of Sanatorium, under the name of Dr Janusz Korczak, in Krasnobród"
Children Sanatorium in Krasnobród / Orthopedic Rehabilitation Ward

Ivo Marik & Petr Krawczyk, Tomasz Karski & Mikhail Dudin
Closing of the Symposium
Certificates
Planning of the 19th Prague-Lublin-Sydney-St. Petersburg Symposium

COFFEE BREAK

11.30–14.00 SOCIAL PROGRAM: TRIP TO ZAMOŚĆ (CALLED IN ITALIAN: PADOVA DEL NORDE) – BUS TRANSPORT FROM GUEST HOUSE "ZACISZE"

14.30 LUNCH IN ZAMOŚĆ OR IN KRASNOBRÓD

14.30 or 15.30–19.00 VISITING OF CHILDREN REHABILITATION SANATORIUM UNDER THE NAME OF DR JANUSZ KORCZAK IN KRASNOBRÓD. BUS TRANSPORT TO KRASNOBRÓD AND BACK TO ZWIERZYNIEC.

20.00 CELEBRATING SUPPER IN GUEST HOUSE "ZACISZE" IN ZWIERZYNIEC

SUNDAY, SEPTEMBER 25, 2016

7.30–8.30 CELEBRATORY BREAKFAST

GOOD BYE!

NOTES FOR ALL PARTICIPANTS

Lectures and text slides will be presented in English. Time of the individual lectures is **about 20 min, discussion 5 min**. A list of lectures (posters) and chairmen of sessions can be changed!

Conference fee 50 Euros (it contains social programme & refreshment) will be paid during registration. Accommodation in hotels everybody pays independently.

Abstracts of lectures will be published (electronic edition) in the Supplement of the journal Locomotor System 3-4/2016 (http://www.pojivo.cz/en/newsletter).

Participants will receive the Symposium programme & materials and Certificate of the Symposium Attendance

Do not hesitate address your questions to **International Organizers of the Symposium**:

Jacek Karski MD PhD.
Lublin, Poland, E-mail: jkarski@vp.pl

Prof. Tomasz Karski, MD, PhD & Jacek Karski, MD, PhD
e-mail: tmkarski@gmail.com & jkarski@vp.pl

Prof. Ivo Marik, MD, PhD & Petr Krawczyk, MD
e-mail: ambul_centrum@volny.cz & krawczyk@proteorcz.cz

Prof. Mikhail Dudin, MD, PhD & Assist. Prof. Aleksey Shashko, MD
E-mail: ogonek@zdrav.spb.ru & shravan@mail.ru

Speech of welcome to

The 18th Prague-Lublin-Sydney-St. Petersburg Symposium – Congenital and acquired disorders of growing skeleton

Dear Friends, Colleagues, and all Participants of the 18th Symposium in Zwierzyniec

We are all – working in the field of orthopedics, rehabilitation, medicine – meet together for the 18th time. The Symposia took place mostly in Prague, but also in Rhodos, Lublin, Sarbinowo, St. Petersburg and last time in Kroměřiž. Now, we meet all together in Zwierzyniec. A small town and some years before – even a village. Now, this place is important because you are here. You – the famous orthopedic surgeons, rehabilitant doctors and other medicine specialists from the whole Europe.

As I have been repeatedly said – all these Scientific Meetings – were and are possible thanks to Professor Ivo Mařík and his team from Czech Republic mainly from Prague.

Now, some words about Zwierzyniec – this town is famous because of it's history, which you can learn from a special chapter of the Program of our Symposium. For me this place has a great value, because it is my family town, where I attended Primary School, as well as I observed the sad history of Europe, here in Zwierzyniec, during the Second World War. Such event should never repeat. I want to remind you, that we are all brothers, even double brothers, if we speak similar languages. We should only cooperate for the good of all mankind, and we – doctors – in the field of medicine.

I wish you all, dear Friends, a nice stay in Zwierzyniec and also an interesting visit to Zamość and Krasnobród, which we are planning by our Program.

Professor Tomasz Karski MD PhD

Former head of the Paediatric Orthopaedic and Rehabilitation Department of Medical University in Lublin (1995–2009)
Currently: Professor Lecturer in Vincent Pol University in Lublin
tmkarski@gmail.com | t.karski@neostrada.pl | www.ortopedia.karski.lublin.pl

Dear friends!

Allow me to congratulate all of us with yet another meeting in the framework of the 18th Prague-Lublin-Sydney-St. Petersburg Symposium.

I would like to stress, that for the team of 'Ogonyok' Rehabilitation Center, which I am honoured to be head of, it is a celebration of communication with our friends. Our Children's Center of Orthopedics is relatively a new participant of the Symposium and we heartily thank you, our colleagues, for sharing experience and traditions of classical European medicine with us. I hope, that our studies that we present before you, also contribute to the scientific credibility of our society.

I will allow myself to say, that medicine is one of the brunches of development of world civilization. A doctor is not mere mortal, because he or she is given a gift of mysteries of the human body. But the most fascinating thing is that the more we know and understand, the more we realize how lacking our knowledge is. That is why in the present-day age of informational boom, solutions of many medical problems can be found only within interdisciplinary cooperation. This conclusion directly regards the orthopaedics.

Let me quote my fellow countryman, Professor Henry Ivanovich Turner (1858–1941), the founder of children orthopaedics in Russia. He once wrote: "Our tasks are far beyond 'straightening' the children. All the ages give us contingent of clients, who cannot even be called diseased, but only victims of physical mutilitation in the whirlpool of life or because of uterine malformation. We cannot set the milestones, definitely marking the limits of our profession, as can urologists, laryngologists, gynecologists, ophthalmologists and other specialists, dealing with a certain body part, certain organ – throat, ear and etc. Our scope is wider in regards of dimension, as we deal with a large area of a body; our tasks are sometimes complicated and various, as we face the necessity to correct the consequences of a vast diversity of reasons. We focus on prevention and correction of outcomes of malformation or acquired flaws of musculoskeletal system functions. Our mission is to reduce the external misshapen forms and to return physical working capacity" ('Selected works'. 1958).

Today I would like to express my deep respect to the brilliant Polish orthopaedist, Professor Tomasz Karski. He is the doyen of our Symposium, who achieved the mastery of the great Physician, and to this day, he impresses us all with his energy, love for people and passion in discussions. We wish you long prosperous years ahead of you, pan professor!

Sincerely yours

Professor Mikhail Dudin

Director of Children's Rehabilitation Center of Orthopedics
and Traumatology "Ogonyok" St. Petersburg, Russia
E-mail: ogonek@zdrav.spb.ru

Dear Ladies and Gentlemen, my dear colleagues!

I would like cordially to welcome you all at this international event that is this year organized by the honorary member of the Society for Connective Tissues, Czech Medical Association J.E. Purkynje Professor Tomasz Karski, MD, PhD and his family team.

Allow me, dear Tomasz, give you and your team my great thanks by the name of all participants for your endeavour to prepare for us very interesting and unique social programme in your family town and beautiful country with a lot of wonderful historical towns and monuments. I thank to all participants for long lasting interest in interdisciplinary directed traditional the Prague-Lublin-Sydney-St. Petersburg Symposium because you are inseparable constituent for its realization and repetition. My sincere thanks belong to Mgr. Jan Skiba – mayor of the town Zwierzyniec – for his all-rounded support of this pregnant event. Last but not least my warm thanks belong to other international organizers Jacek Karski MD, PhD (Lublin, Poland), Professor Mikhail Dudin, MD, DSc. & Assist. Prof. Aleksey Shashko, MD (St. Petersburg, Russia) and Petr Krawczyk, MD (Ostrava, Czech Republic).

According to the programme this year we can look forward to outstanding lectures of our colleagues from Australia, Belarus, Czech Republic, Egypt, Germany, Poland, Russia and Ukraine, i.e. representatives of 8 nations. I am very glad that among speakers and lecture co-authors are younger colleagues because in their hands will be to carry the torch of the Prague-Lublin-Sydney--St. Petersburg Symposium in the near future.

Anyway, I believe that we all spend together five days which amplified our experience and knowledge in the comprehensive care and treatment of disabled patients. I wish you enjoy from new scientific information and I sincerely recommend you to make new friendships and establish international relations that should help you for arrangement of an international interdisciplinary scientific research.

Let me give you the best regards of Professor Kazimierz Kozlowski from Sydney, a big scientific person born in Poznaň. He was the main initiator of the 1st Prague-Sydney Symposium in 1998 and he had been presented in the Symposium to 2007.

At the end of my speech let me a reminiscence of a few moments that we spent together in historical Kroměříž where most of us met last year.

See photos.

I cordially wish the great success to the 18th Prague-Lublin-Sydney-St Petersburg Symposium and I consider the Symposium to be open!

Professor Ivo Marik, MD, PhD, FABI

Chief of the Centre for Patients with Locomotor Defects, Prague, CZ
President of the Society for Connective Tissue, Czech Medical Association, J.E. Purkynje
Scientific secretary of the Society for prosthetics and orthotics Czech Medical Association J. E. Purkynje
Chief-Editor of the journal Locomotor System – advances in research, diagnostics and therapy
E-mail: ambul_centrum@volny.cz


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ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

THE ROLE OF FACTORS OF POSE ASYMMETRY IN THE PROCESS OF TRANSITION OF A HEALTHY SPINE INTO A SCOLIOTIC ONE

Dudin Mikhail Georgiyevich, Khaimina Tatiana Vladimirovna, Avaliani Tatiana Varlaamovna, Pinchuk Dmitry Yuryevich
Children's Rehabilitation Centre of Orthopaedics and Traumatology «Ogonyok», St. Petersburg, Russia
E-mail: ogonek@zdrav.spb.ru

Key words: idiopathic scoliosis, factors of pose asymmetry: arginine8-vasopressin, oxytocin

One of the paradoxes of AIS is a distinct lateralization of clinical symptoms. However, the discussion of reasons of this phenomenon is quite stagnant.

Meanwhile, in the 80-ies of the XXth century, in Saint-Petersburg, a group of scientists led by academic G.A. Vartanyan was studying the compensatory abilities of the cerebrum and discovered so-called 'factors of pose asymmetry' (FPA).

Their biological effect manifested itself in the isolated (one-sided) rise of sensitivity of motoneurons of the spine to the electrical impulses. The latter means that the higher cerebral structures are allowed to produce much less 'volume' of efferent information to activate the cells, which assure the muscles do all the necessary work.

The detailed study of FPA showed their complete independence of the species of animals with simultaneous somatotopic and spatial specialization.

These substances belonged to a group of neuropeptides produced in the hypothalamus.

Some of them were similar in the amino acid composition to arginine8-vasopressin (Cys-Tyr-Phe-Gln-Asn-Cys-Pro-Arg-Gly), and the others – to oxytocin (H-Cys-Tyr-Ile-Gln-Asn-Cys-Pro-Leu-Gly-NH2). By the way, Vincent du Vigneaud (1901–1978) won a Nobel Prize in Chemistry in 1955 for the isolation, structural identification, and total synthesis of the cyclic peptide, oxytocin.

The physiological effect of arginine 8-vasopressin manifests itself only on motor units of the right side of human body, while the effect of oxytocin shows only on the said units of the left part. Let's point out that this effect of the mentioned natural regulators appeared only when their concentration was high (speaking of physiological concentrations in blood, the first is one of the most important regulators in water-salt metabolism and the second one regulates the reproductive function of women).

On the 1st stage of FPA study (method of biological testing) only the fact of their high amount in typical patients with AIS of various severity levels (from 10^{o} to 50^{o} Cobb's) was stated.

While analysing the results using the 'blind method', were discovered the direct correlations of this fact with the main characteristics of scoliosis (the value of the arc and its progression), both in group and in every specific case.

On the 2nd stage, the quantification (ELISA) of concentration of vasopressin and oxytocin was realized in children with «flat back» and «round back» syndromes and also with AIS up to 10° Cobb's. Analysing the results, the fact of a higher level of FPA in children with «flat back» and «round back» syndromes comparing to the concentration with patients with AIS was stated. Also, the correlation between oxytocin concentration and right-sided scoliosis progression was discovered.

On the base of all the acquired data the model, showing the role of FPA in transition of non-deformed spine into the scoliotic one, was created.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

IDEOLOGY OF CONSERVATIVE TREATMENT OF AIS IN CHILDREN'S REHABILITATION CENTRE OF ORTHOPAEDICS AND TRAUMATOLOGY "OGONYOK"

Dudin Mikhail Georgiyevich
Children's Rehabilitation Centre of Orthopaedics and Traumatology «Ogonyok», St. Petersburg, Russia
E-mail: ogonek@zdrav.spb.ru

Key words: idiopathic scoliosis, pathogenic conservative treatment

The most undisputable fact in theory and practice of AIS is still its correlation to the child's growth. It was noticed by Hippocrates and proved by a group of French scientists led by G. Duval-Beaupere (1980). Czech scientist Milan Roth (1969) made an invaluable contribution to the understanding of this process occurring in the spinal complex.

On the basis of word literature data and our own study of AIS we created a mathematically proven model of pathogenesis of 3D deformation of the spine. It allowed to see all the stages of arise and development not only of AIS, but to explain the appearance of other types of scoliosis, such as transitory' new born scoliosis' and other. However, the most valuable result of this model is the detection of 'targets' for medical treatment, allowing us not only to solve problems of effective fight against the progression of the deformation of a spine, but also to prevent scoliosis as decease.

There is a complex of medical treatment based on three directions, that was developed in the Children's Rehabilitation Centre of Orthopaedics and Traumatology 'Ogonyok' for progressive scolioses, both for idiopathic ones and of a certain etiology.

The first direction – **pathogenetic methods**, aimed at influencing the processes ofosteogenesis:

- Correction of osteotropic hormonal profile by the rise of cortisol level in blood, as the antagonist of the growth hormone;
- Magnetic influence on growth zones (apophysary zones) of vertebral bodies;
- Electro- and magnetic stimulations of paravertebral muscles controlled by EMG;
- Medically induced stimulation of functional condition of spinal cord;
- Special-purposed massage.

The second direction – **supplementary methods**, aimed at fighting the 'vicious circle' (by Stokes I., 1996, 2000), or with Hueter-Volkmann effect:

- Orthosis by J. Cheneau type corsets;
- K. Schroth breathing orthopaedic system;

The third direction –**background methods**, aimed at supporting the general condition of the locomotor system of a patient:

- Individual physiotherapy with biofeedback principle appliance;
- Group sessions of physiotherapy, including games;
- Swimming with elements of breathing gymnastics;
- General massage;

As a result of realisation of these technologies in our clinic for the last 10 years not one patient with AIS, who came to have a conservative treatment, was transferred to any other facilities to have a surgical correction of the spine deformity. This scheme proved to be the most effective for patients with AIS up to 40' Cobb's.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

PREVENTION OF AIS AS A PATHOLOGICAL 3D DEFORMATION OF THE SPINE

Dudin Mikhail Georgiyevich
Children's Rehabilitation Centre of Orthopaedics and Traumatology «Ogonyok», St. Petersburg, Russia
E-mail: ogonek@zdrav.spb.ru

Key words: idiopathic scoliosis (lordoscoliosis, kyphoscoliosis), prevention, risk group criteria, stages of transition of a healthy spine into a scoliotic one

During the congress of IRSSD-2012 in Poznań (Poland) Keith Bagnall said that the real work with patients, who have scoliosis, starts only then, when the first symptoms of deformation arise. Then

he mentioned that there is always a period of live in every patient's life, during which a healthy spine becomes a scoliotic one. Keith Bagnall named this time a 'dark period'.

Understanding of this period is important, because during it there can be effective AIS prevention activities. There are no such reports in the literature so far. Meanwhile, the matrix of AIS pathogenesis, developed by us, let us see two stages of that 'dark period'.

The first stage is **before clinical**. It is only characterised by the changes of value of physiological curves and such outcomes as **'flat back'** and **'round back'**. **'Flat back'** is primary to lordoscoliosis development, and **'round back'** precedes kyphoscoliosis, which was predicted by mathematical calculations and then proven with longitudinal observation of the limited part of child population. Moreover, mathematical research showed the reason of the said changes in the vertebral complex. It became evident that it is the intensity of osteogenesis in the supporting column of the body vertebrae. In case of excessive osteogenesis (intensive longitudinal growth), thoracic kyphosis disappears and lumbar lordosis enlarges. The opposite picture develops when there is lack of osteogenesis.

The second stage is **subclinical** (also justified by mathematical calculations, proven during 'flat back' and 'round back' syndrome patients' observation). It shows as a one-sided torsion of the vertebral column. Such torsion can arise both with 'flat back' and 'round back'.

We consider the clinical symptoms of the previously mentioned stages the direct criteria for 'risk group' of lordoscoliosis (in case of 'flat back' syndrome) and of kyphoscoliosis(in case of 'round back' syndrome).

On this basis, prevention of both lordoscoliosis and kyphoscoliosis must start with detection of the said syndromes. The finding of any of them initiates the appropriate medical treatment.

In case of 'flat back' they are aimed at inhibition of longitudinal growth of the skeleton and, in our experience, the most effective methods are the following:

Medically induced stimulation of cortisol synthesis (functional antagonist of growth hormone) on the background of reduction of endogenic (elimination of UV irradiation) and exogenic D3 Vit (elimination of D3Vit therapy) with the simultanious hypocalcium diet. In case the patient stays at the medical facility, we can add inhibition of activity of apophysary zones of body vertebrae with 1.5 T magnetic field.

The aim of treatment in case of 'round back' syndrome is directly opposite. The following methods are effective: the stimulation of growth hormone with the simultaneous D3Vit therapy and hypercalcium diet.

During the before clinical stage of lordoscoliosis and kyphoscoliosis development all the before mentioned tactics are added by electrostimulation of the muscles on the side of direction of torsion of the vertebral column with the simultaneous detortional kinesitherapy.

The real application of this medical treatment plan has been put into action on the limited contingent of child population (750 patients, aged 8–12 y.o.). As a result we received reliable change of statistical data during the clinical and instrumental evaluation of the vertebral column shape: the number of children with the full 'package' of 3D deformation symptoms decreased from 44 cases (2011) to 8 cases (2015).

Summarising, we would like to point out that though we did not receive 100% effect, the first results are encouraging.

EXTENDED ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

ULTRASOUND OF PARAVERTEBRAL MUSCLES IN ADOLESCENT IDIOPATHIC SCOLIOSIS

Rybka Dina Olegovna, Dudin Mikhail Georgiyevich
Children's Rehabilitation Centre of Orthopaedics and Traumatology «Ogonyok», St. Petersburg, Russia
E-mail: ogonek@zdrav.spb.ru

Keywords: method of ultrasonic diagnostics, scoliosis, mm. transversospinales

Summary

The leading role in the formation of adolescent idiopathic scoliosis **(**AIS) belongs to paravertebral muscles, but the study of their specific role in the vast majority of work is reduced to the electromyography (EMG) (**1**).

There is a method of muscle ultrasound with neuromuscular diseases (**2**). Meanwhile, in the public literature there are a few studies on the use of this technology in patients with a scoliosis.

Introduction

perform ultrasound paravertebral muscles in children with a diagnosis of adolescent idiopathic scoliosis **(**AIS) receiving comprehensive conservative treatment on the basis of the Recovery Centre for Children's Orthopaedics and Traumatology "Ogonyok", St. Petersburg and to identify correlations between the findings and the results of EMG paravertebral muscles.

Material and methods

Ultrasound examination of paravertebral muscles was performed using an ultrasound scanner Aloka SSD-1100. For the study was used a linear transducer of 7.5 MHz. Also conducted studies of paravertebral muscles during Adams' samples.

The study was conducted in a horizontal plane. The sensor is mounted perpendicular to the backbone (in the horizontal plane) and moving it across the length of the spine, at the same time appreciating the cross structure of paravertebral muscles, intermuscular fascia, and interspinous ligaments at all interested segments. In the ultrasonic range in more detail fell into a group of deep paravertebral muscles, namely: m. transversospinalis, m. semispinalis, m. intertransversales, m. rotatores, m. multifidus (**Figure 1, Figure 2**).

According to the proposed method were examined 15 children with scoliosis from 5˚ Cobb to 50˚ Cobb and direction of deformation of the arc. The control group consisted of 10 healthy children.

Results

In 12 (all) children with scoliosis 20–25˚ noted change paravertebral muscle structure on the top of scoliotic arc from the strain in the form of increased echogenicity and heterogeneous structure due to different-sized point and linear hyperechoic inclusions in the muscle tissue and fascia intermuscular no "acoustic track" (**Figure 3**). Most of them are similar, but less pronounced changes were visualized in a projection of the arc base, also from the strain (**Figure 4**).

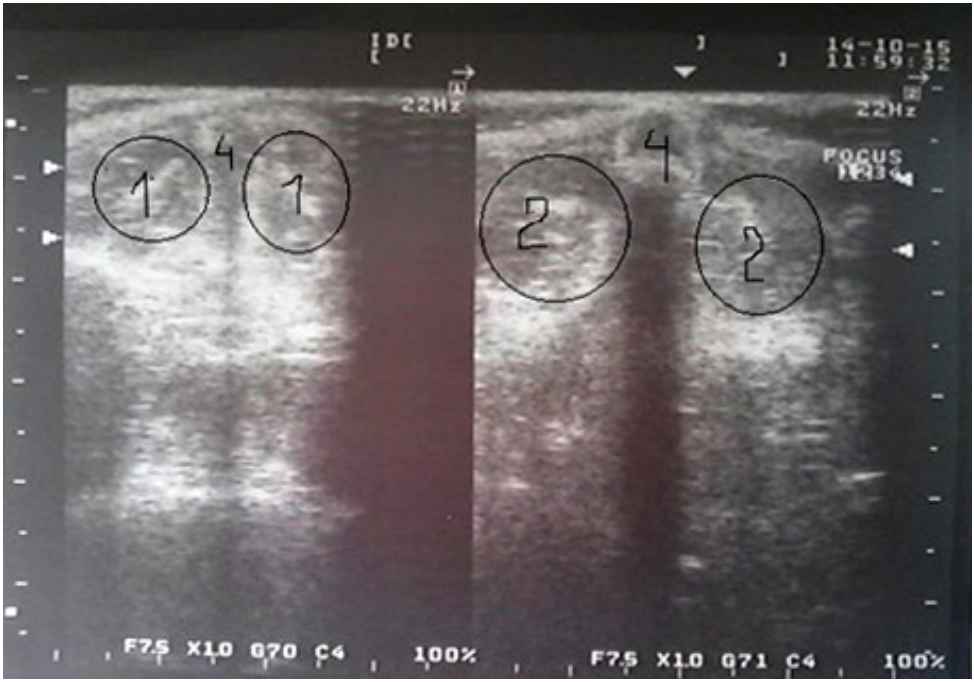

Figure 1: 1 – M. transversospinalis, hyperechoic inclusions of the strain; 2 – M. transversospinalis, concave side.

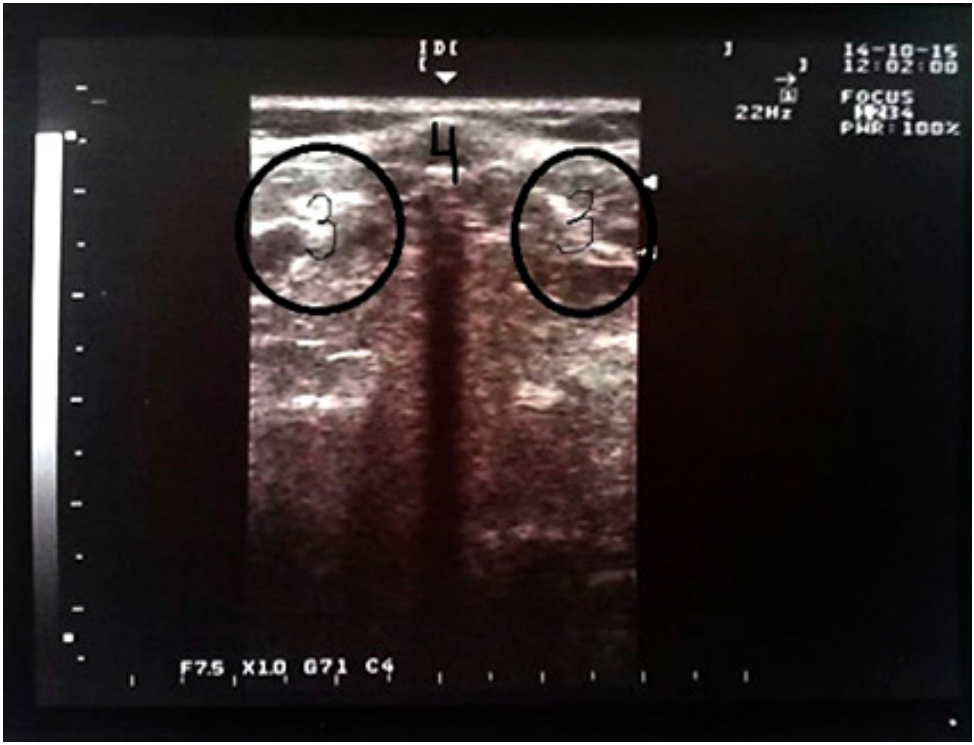

Figure 2: 1 – M. transversospinalis, hyperechoic inclusions of the strain; 2 – M. transversospinalis, concave side.

Function device «Gistogramnye change» (HIST) was used in the second stage of the study, which outputs the intensity of the echo signal on an arbitrary portion of the ultrasonic profile using the histogram. (**Figure 5**)

This was evaluated:

T – number of pixels in an arbitrary or fixed portion
L – level intensity corresponding to the intensity of the frequent component in a given area.
M – the number of pixels corresponding to the most frequently occurring component of the intensity at a given site.
MN – average level of intensity in a given area.
SD – standard deviation is the intensity at a given site.

Considering function of gistografia there were examined 8 children with scoliosis and 5 children without spinal deformity. Of these, 4 children with left thoraco-lumbar scoliosis 20–25˚ (group 1), 4 children with scoliosis 26–50˚ (group 2).

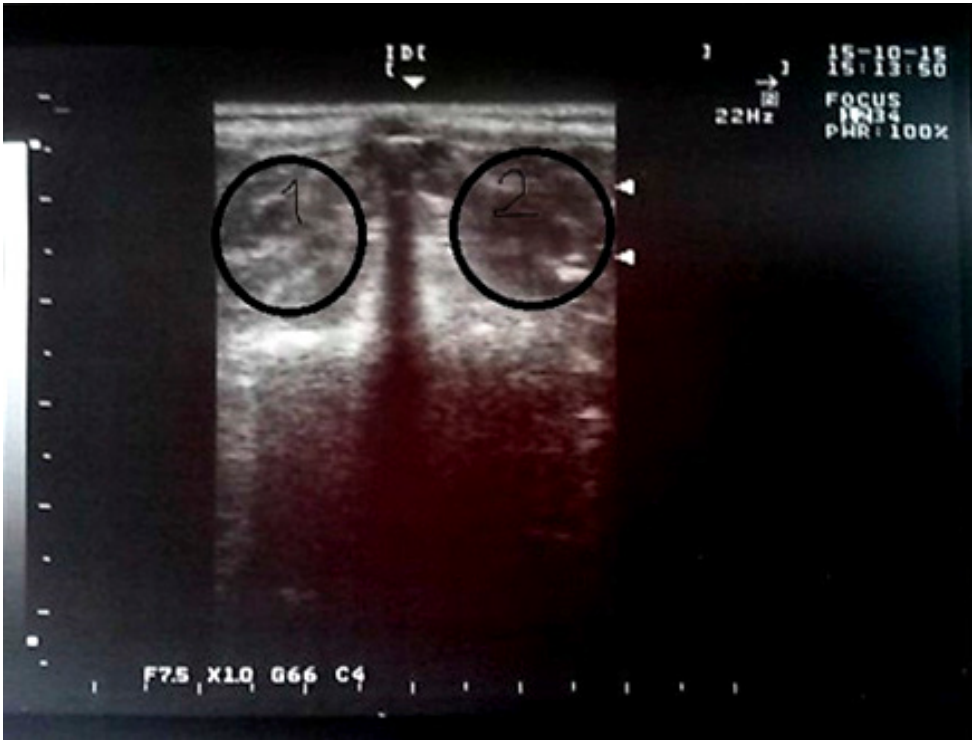

Figure 3: 1 – M. transversospinalis, hyperechoic inclusions of the strain; 2 – M. transversospinalis, concave side.

In the first group densities of paravertebral muscles were elevated on top of the arc with the convex side of the deformation and also increased, but less pronounced in the projection base scoliotic arc with the convex side.

In children with scoliosis more than 50 * Cobb increase of a muscle density was noted at the top of the arc, but with concave sides.

The children in the control group in all cases of asymmetry of indicators muscle density was observed.

These ultrasonic diagnosis in all patients were compared with electromyography of paravertebral muscles. In 82% of cases noted the coincidence of increasing the bioelectric activity at increasing the density of the histogram.

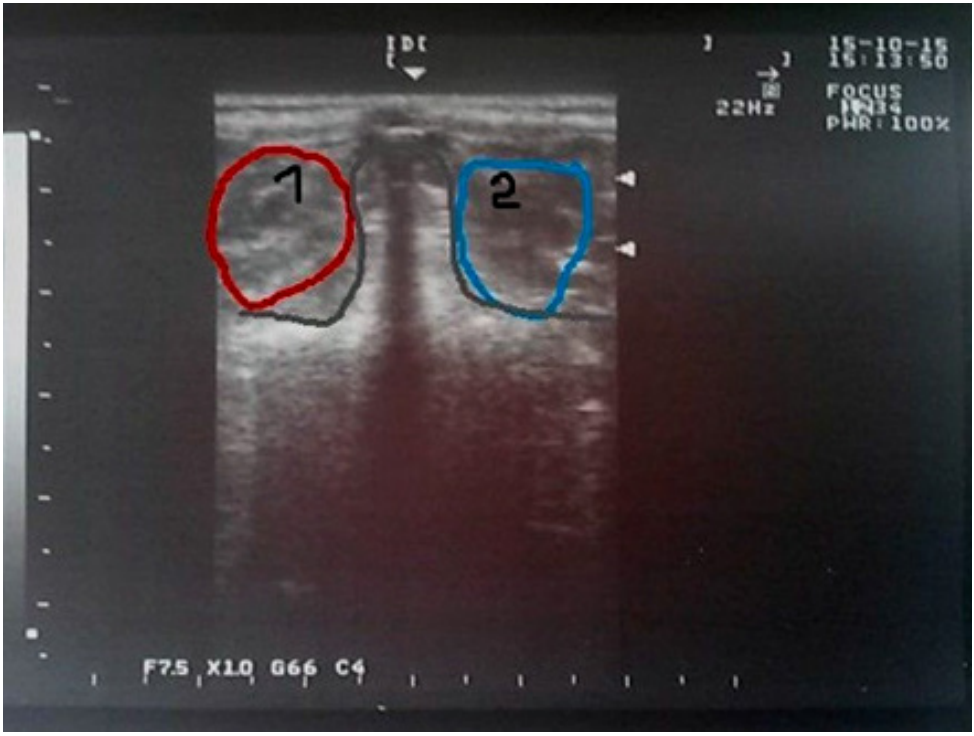

Figure 4: 1 – M. transversospinalis, hyperechoic inclusions of the strain; 2 – M. transversospinalis, concave side.

Discussion and conclusion

thus, our study showed that ultrasound characteristics of paravertebral muscles (mm.intertransversalis) in children with scoliosis are different from those of healthy subjects. In particular, at the top of the arc there is an increased echogenicity, but the party with which it is diagnosed depends on the severity of the strain.

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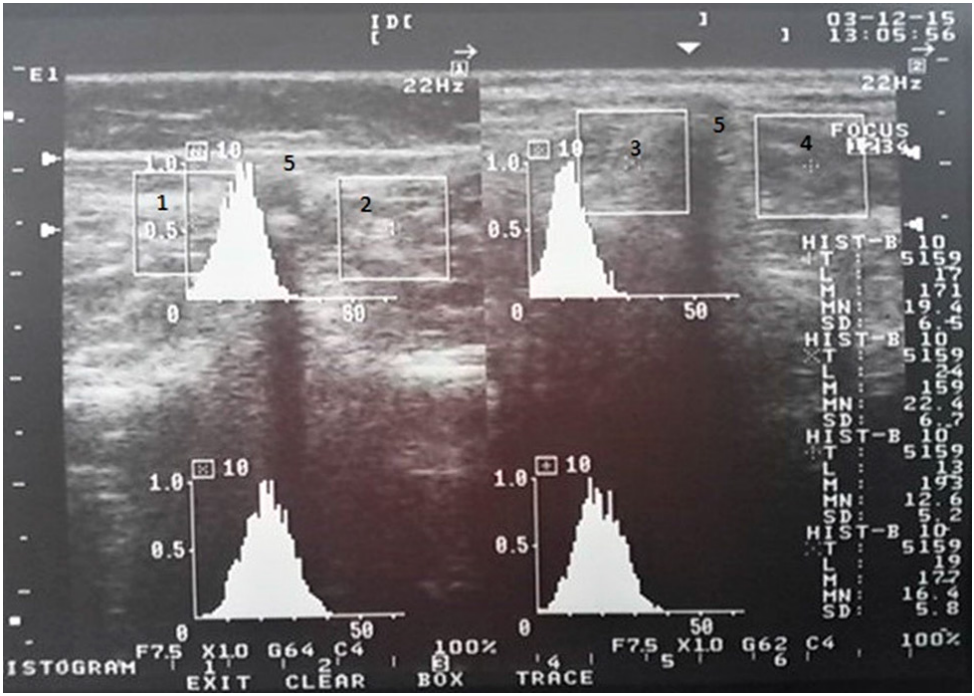


Figure 5: 1 – M. transversospinalis sinister, registration muscles ehoplotnosti using gistografii. 2 – M. transversospinalis sinister, registration muscles ehoplotnosti using gistografii. 3 – M. transversospinalis dexter, registration muscles ehoplotnosti using gistografii. 4 – M. transversospinalis dexter, registration muscles ehoplotnosti using gistografii. 5 – Spinous process.

EXTENDED ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

SKELETAL DEFORMITIES MEASUREMENTS OF X-RAY IMAGES AND PHOTOS ON THE COMPUTER

Cerny Pavel[1), 2)], Stolinski Lukasz [3), 4), 5)], Drnkova Jana[2)], Czaprowski Darius[7)], Kosteas, Andreas[2)], Marik Ivo[1), 6)]
(Prague, Czech Republic)
1) Faculty of Health Care Studies, West Bohemia University, Pilsen, Czech Republic
2) ORTOTIKA, l.l.c., Prague, Czech Republic
3) Rehasport Clinic, Poznan, Poland
4) Spine Disorders and Paediatric Orthopaedics Department, University of Medical Sciences, Poznan, Poland
5) The Institute fighting with pain, Rehasport Clinic Licensed Rehabilitation Centre, Skierniewice, Poland
6) Ambulant Centre for Defects of Locomotor Apparatus l.l.c., Prague, Czech Republic
7) Department of Physiotherapy, Józef Rusiecki University College, Olsztyn, Poland
E-mail: pavel@ortotika.cz

Key words: pelvis, rotation, angle, vertebra, spine deformity, scoliosis, X-ray picture.

Introduction

Skeletal deformities especially in children during growth are closely monitored. In order to objectively assess the health status during the reporting period, it is necessary to know how these changes are measured and evaluated. To assess skeletal deformities have been developed a variety of methods, especially those witch are objective, simple and surely the most commonly used.

Nowadays, when they are widely used computer procedures can be divided them according to whether true in general, for example Cobb angle etc. or computer programs, where we get the result using some hidden algorithms (**7, 10**). The advantage of generally applicable methods is a benefit using manually, but to use the same principles on a PC (**3**).

Methods

Our aim was to process digital X-ray images and photos in digital form using familiar and some new methods on the computer so that they are used the classic methods (**3**). This is not about creating special simulations and algorithms, but only uses a computer to facilitate and shorten the work in clinical practice. In creating of the program on the Windows platform have been subsumed the methods of X-ray images: Cobb's and Ferguson's angles and curvatures according to the line of spinous processes, further axial vertebral rotation according to Cerny (**1**), Perdriolle (**18**) Raimondi (**18**) and Stokes (**17**), pelvic rotation according to Cerny (**2, 4**), rib index according to Grivas (**9**) and tilts including of the pelvis position in the sagittal plane (**11, 12**).

The second part of the menu is the processing of the photos. Were included methods: tibia-femoral angle according to Marik (6, 19), Fröhner's index (**8**), index ATSI + POTSI (**14, 15, 16**) and curvature of the spine according to the spinous processes SPA, as marked on the skin of the patient (**13**).

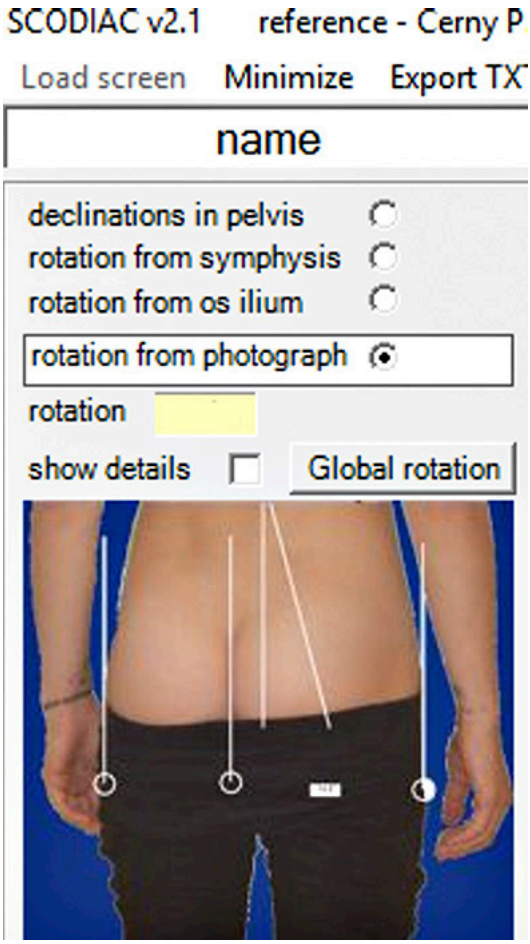
The program was named SCODIAC, written in MS Visual Studio 2015. It contains enlargement and transformation of the program AngleSpine (**3**) which was written in MS Visual Basic 6.

Conceptualization

Program after initializing displays the minimized window in the upper left corner of the screen and remains permanently in the foreground. Setting up and using the program is controlled using a classic drop-down menu in the ordinary top rail.

There is expected knowing of all used methods. The program uses two based procedures. The first is marking points with the click of a left button of PC mouse, where such a small cross is shown. This principle is used in obtaining of the angle of vertebral rotation from AP radiographs as well as in obtaining curvature of the spine from spinous processes SPA. After marking the required number of searched points there is calculated automatically and depicted.

The second way of searching processes is moving by predefined points in the form of small circles. Every point is grasped and moved to the required position on the screen. After each moving by the point there are calculated values automatically. This principle is used in a majority of the methods. Predefined points and shapes facilitate proper procedure.



Discussion

The concept of the program is such that uses a generally applicable methods not handle by unknown or hidden way. In the case where there are used of hidden procedures and calculations, it's necessary to use specific commercial software. For example the great advantage of the program which presented the calculation of the axial vertebral rotation by four methods simultaneously, the user immediately receives the comparison and can themselves choose the one he thinks is best.

The program also offers new methods for evaluation of deformities of digital or digitized photograph, which is increasingly being used due to the non-invasive examination. You can easily get the tibia-femoral angle (**6, 19**) or spinal asymmetry indices (**8, 14, 15, 16**).

Because program procedures are predefined, it is very easy to add other methods. It is also possible to easily perform comparisons of different methods, which contributes to demonstrate their objectivity and accuracy.

Individual steps are continuously recorded and can be exported before closing the program in the form of a text file which is ready for importing into a spreadsheet program such as Excel, allowing the subsequent statistical processing.

Conclusion

Because there are used classical and new methods in not-hidden principles, it is assumed that the program SCODIAC will have long term application in clinical practice. The gradual later version of the Windows operating system can also work with older programs on Windows platform, hence the reason this is not expected obsolescence that program.

Presented processing options of skeletal deformities by the computer should facilitate and accelerate the work of experts in clinical practice. Additionally, the program is offered for download on the internet free of charge on Angle spine web-page and is expected to being gradually improved and expanded.

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ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

INFANTILE POSTURAL ASYMMETRY AND PHYSICAL THERAPY – A RANDOMIZED CONTROLLED TRIAL

Jung Michael[1)], Landenberger M[2)], Jung T[3)], Lindenthal T[4)], Philippi H[5)]
[1)] Carl Remigius Medical School, Frankfurt (Main), Germany
[2)] Medical Faculties, Martin Luther University Halle-Wittenberg, Germany
[3)] Johannes Gutenberg University Mainz, Germany
[4)] Clementine Children`s Hospital Frankfurt (Main), Germany
[5)] Centre of Developmental Neurology Frankfurt (Main), Germany

Key words: Infantile postural asymmetry – Congenital muscular torticollis – Vojta therapy – Neurodevelopmental Treatment – Physical therapy – Paediatrics

Background

Physical therapy is an acknowledged and frequently applied method for infantile postural asymmetry. However, there is not yet sufficient evidence for its effectiveness in paediatric treatment.

Objectives

In a randomized controlled trial, the effect of Vojta therapy versus neurodevelopmental treatment (NDT) is assessed in infants with postural asymmetry.

Methods

Sixty-five infants with postural asymmetry were recruited. Thirty-seven infants aged 6 to 8 weeks (mean 7.38) were found to be eligible and randomly assigned to two groups, with 19 receiving Vojta therapy and 18 NDT. Using a standardized and blind video-based assessment, restriction in head rotation and convexity of the spine in prone and supine position before and after therapy were

documented. A reduction of at least 4 points (range of scale 20 points) in postural asymmetry was regarded as a clinically relevant change.

Results

A 4-point reduction was achieved in both groups within eight weeks. A mean difference (pre-post) between the groups of –2.96 points (95% CI [–5.01; –.91]) in favor of Vojta therapy was observed (p = 0.025). Improving attitude was more evident in the supine position than in the prone position.

Discussion

While both NDT and Vojta therapy are effective in the treatment of infantile postural asymmetry and well applied by the parents' therapeutic effectiveness is greater within the Vojta group. Parental compliance was the same in both groups regardless the babies crying in the Vojta group.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

MECHANISMS OF REGULATION OF VERTICAL POSTURE IN ASYMPTOMATIC VOLUNTEERS AND IN PATIENTS WITH LUMBAR DISC DEGENERATION DISEASE

Kolesnichenko Vera Anatolyevna, Litvinenko Konstantin Nikolayevich
SI "Sytenko Institute of Spine and Joint Pathology
National Academy of Medical Sciences of Ukraine", Kharkov, Ukraine
E-mail: veakol@rambler.ru

Key words: postural control, spinal-pelvic balance, muscle control dysfunction, types of standing

Objective

to study motor control dysfunction and its compensation mechanisms in patients with lumbar disc degeneration diseases.

Methods

60 patients with lumbar disc degeneration diseases were observed in the SI "Sytenko Institute of Spine and Joint Pathology NAMS" vertebrology clinic. We evaluated the mobility of the spine and hip, the parameters of sagittal spinal-pelvic balance and the location of the lower limbs joints relative to the line gravity, gravity line positionon aforce plate in the sagittal and frontal planes; the parameters of EMG of the lumbar part of the m. erector spinae,m. rectus abdominis, m. rectus femoris, m. biceps femoris, m. tibialis anterior, m. gastrocnemius using surface electrodes.

Results and discussion

Ergonomically and biomechanically determined discordant versions vertical posture. It is shown that the postural balance regulation mechanisms are aimed at: 1) the preservation of the ideal ratio of "balance of spine" to "balance the pelvis" at the location of the line of gravity in the area of lumbosacral disc that achieved little hip flexion, and in patients with lumbar disc degeneration diseases – and a compensatory increase in sagittal tilt spine; 2) keeping the ideal position of the hip joints during anterior displacement of the line of gravity with the position straightening the trunk, while in patients with the lumbar disc degeneration diseases – and compensatory pelvic retroversion. It was established that the frontal plane of vertical posture ergonomics ensured asymmetrical standing with compensatory ipsilateral bend of the trunk and pelvis latero-flexion. Compensation mechanisms postural imbalance with functionally disable units body segments consist in a significant tightening of links of the kinematic chain of the spine – pelvis – hip joints with significant restrictions on their mobility, increasing the interdependence of bioelectrical activity of the muscle groups of the trunk and lower limbs, and changing the parameters of functional stability of the vertical posture.

ABSTRACT

KNEE PROBLEMS CONNECTED WITH INCORRECT SEATING POSITION. A CASE REPORT

Karski Jacek[1)], Karski Tomasz[2)]

[1)] Paediatric Orthopaedic and Rehabilitation Department of Medical University in Lublin

[2)] Vincent Pol University in Lublin, Poland

E-mail: jkarski@vp.pl

Key words: knee problems – incorrect seating position

Introduction

Among various causes of knee problems, the common causes undermined by both doctors and patients may be prevailing.

These are the following common causes of knee problems:

a) varus deformity resulting in the subsequent instability of the knee
b) valgus deformity resulting in the subsequent instability of the knee
c) flexion contracture of the knee (even 2 – 3 – 5 degree)
d) recurvation (hyperextension) of the knee

e) patello – femoral joint related problems. In the syndrome of the higher-pressure of patella (lateral position of patella), in semi – dislocation of patella, in chondromalatio of patella.

In our material, causes **"a"** to "**d"** were present in 20% of cases and, "**e"** was the case of 80%.

Observations and material

In our observations there are cases (material – N – 28) of patients reporting pain of the knee connected with the manner of incorrect setting on daily bases. This problem mainly refers to girls or women who sit in maximal rotation and flexion of one leg. The present article provides numerous examples of such incorrect way of sitting.

Clinical report

The patients informed the doctor about pain present in many situations – at home and at job. The location of the pain was mostly in the lateral region of knee, or under the patella. The patients had difficulties with standing up, standing in the street, while changing the direction of walking (if a twist was required), getting up in the morning and in other situations. The clinical examination showed a full extension of the knee, full flexion, and no fluid in the joint. Nevertheless, they were accompanied by the lateral instability and frequent rotation instability caused by the loosening of medial or lateral ligament or loosening of ligament cruciatum. A precise examination with long anamnesis indicated that the cause of knee problems was the position of improper sitting for many hours, days, months or even years (figures / photos).

Conclusion

The daily practice of doctors in the Out-Patients Department proved that it is important to ask the patients about their daily habits connected with sitting and standing (standing 'at ease' on the right leg is the cause of so-called idiopathic scoliosis). The research proved that improper way of setting can cause of knee problems such as instability, insufficiency and pain.

Literature

www.ortopedia.karski.lublin.pl

ABSTRACT

TALO-CRURAL JOINT (ANKLE JOINT) INSUFFICIENCY AND PAIN IN THE LEFT LEG OF DRIVERS – AND IN THE RIGHT LEG OF THE PASSENGERS. A CASE REPORT

Karski Tomasz[1)], Karski Jacek[2)]
[1)] Vincent Pol University in Lublin, Poland
[2)] Paediatric Orthopaedic and Rehabilitation Department of Medical University in Lublin
E-mail: t.karski@neostrada.pl, tmkarski@gmail.com

Key words: ankle joint – talo-crural joint – isufficiency – pain

Introduction

Among various causes of foot insufficiency connected with pain, there are mostly the ones indicated by the pathological flexion test of the toes such as insufficient plantar flexion, or valgus deformity of the foot, or valgus deformity of the big toes (hallux valgus) and many others awaiting for discovery by orthopaedic surgeons, e.g. Köhler disease in young girls.

Causes of ankle joint insufficiency. Material

In our material of 15 cases (N – 15 cases) we discovered that the permanent distortion of the ankle joint (mostly left one) can be the cause of a serious foot insufficiency. It has been found that such insufficiency in the left foot is very common in drivers and (13 cases) and less common in passengers (2 cases). Our observations prove that this permanent distortion of the ankle joint (left or rarely right) is a new syndrome. This syndrome has never been discussed by previous literature, but the daily practice of the orthopaedic surgeons may indicate a greater insistence of the cases.

Case report. Own observations. Clinical examination

The cause of the left foot insufficiency is the rotation movement connected with the permanent distortion of the ankle joint, repeated each time we get out of the car, and a small car in particular. When the car stops, the driver opens the door and puts the left foot on the ground and turns to the left making the external rotation movement of leg on the stabilized foot. Such permanent rotation movement causes the distortion and loosening of talo-crural joint (loosening of synostosis tibio – fibulare) and consequently the instability of the ankle joint. In the examination we can confirm the loosening of this joint. Tarsus part of the foot is swollen, and pain appears in the tarsus region (in sinus tarsi). Patient feel the pain and start to walk in equines position of the foot. Next the pain appears in shank – in the region of the triceps surae and Achilles tendon. The illness develops sometimes for 2 – 3 – 4 years. In our patients the initial diagnosis was never the proper one. It mainly indicated the circulatory insufficiency, but recommended therapy gave no results. Only prophylactic behaviour and kinesiotherapy give good results.

Conclusion

1) We present the new syndrome of permanent distortion of the ankle joint (mostly left) in drivers (mostly using compact cars).
2) In our material we advise to change the "getting out of the car" position and physiotherapy.
3) It is important to inform all drivers about the necessity of prophylactics.

ABSTRACT

DEFORMATIONS OF THE FEET, KNEES, HIPS, AND PELVIS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION (MBD). CAUSES. TREATMENT. PROPHYLACTICS.

Karski Jacek[1)], Karski Tomasz[2)]
[1)] Paediatric Orthopaedic and Rehabilitation Department of Medical University in Lublin
[2)] Vincent Pol University in Lublin, Poland
E-mail: jkarski@vp.pl t.karski@neostrada.pl

Key words: deformations of foot, knee, hip, pelvis – minimal brain dysfunction – MBD – cause – treatment – prophylactis

Introduction

In Poland almost 7% of the population of children and youth are born with various changes in the central nerve system (CNS). The status of such cases we described as Minimal Brain Dysfunction (MBD). Consequently, secondary changes of the locomotor system can be observed.

Material

This article provides observations from the years 1995 – 2015. The material consists of N – 955 children and youths aged from 2 to 18. The result of MBD can be as follows: valgus deformity of the feet, hyperextension of the knees, anterior tilt of the pelvis, hyperlordosis of the lumbar spine.

Valgus or plane valgus deformity of the feet

The mechanism of the deformity:

1) while walking we need to take each step with the dorsal flexion of the feet,
2) in the case of the shortening of the Achilles tendon and m. triceps surae and accompanying the laxity of joints, the required dorsal flexion is only possible in prone position of the feet,
3) such repeated "dorsal flexion in prone position" after some years may give "full fixed valgus, or "plane – valgus deformity" of the feet. The described deformity of the feet is very common among Polish children, even 7 % to 11%.

Recurvation and valgus deformity of the knees

Recurvation of the knees is very often accompanied by a valgus deformity. Such deformity of the knees is also the effect of a shortening of the Achilles tendon and m. triceps surae and there is also a compensatory deformation. Children with MBD very frequently has the manner to seat in TV position (legs apart with back direction). The present article explains the mechanism of such deformity.

Anterior tilt of the pelvis and hyperlordosis of the lumbar spine

In children with MBD, additionally there are frequently observed in the anterior tilt of the pelvis**.** Spasticity or sub spasticity is also common the region of the m. rectus, the part of m. quadriceps. When this muscles are spastic they cause an anterior tilt of the pelvis. We observe this deformity of the pelvis in 11% of people in Poland.

Conclusions

1) In Poland from 7 % to 11 % of children and youth have the symptoms of Minimal Brain Dysfunctions (MBD).
2) When in result of MBD there is shortening of tendons and muscles and contemporary laxity of joints can develop feet valgus or plano – valgus deformity, recurvation of knees, anterior tilt of pelvis with hyperlordosis of lumbar spine.
3) Early treatment of all above mentioned deformities in childhood is the best prophylactics of pain syndromes in feet, knees, hips and spine in adults. In the treatment of all deformities cussed by MBD, the best method physiotherapy with the stretching exercises. Only by 5 % of patients need operations treatment.

ABSTRACT

STATUS OF LOCOMOTOR SYSTEM IN THE PATIENTS FROM THE VILLAGES REGION FROM SOUTH EAST REGION OF POLAND

Domagała Marian[1)], Karski Tomasz[2)], Karski Jacek[3)], Żaroffe Bernard[1)], Stokowska-Wojda Małgorzata[1)], Kowalska Magdalena[1)]

[1)] Medical Centre in Laszczów (Director of Centre Dr Marian Domagała), Poland

[2)] Vincent Pol University in Lublin, Poland

[3)] Paediatric Orthopaedic and Rehabilitation Department of Medical University in Lublin

E-mail: tmkarski@gmail.com t.karski@neostrada.pl

Key words: locomotor system problems – deformity of extremities and spine – south-east region of Poland

Introduction

Among children the problem of movement apparatus (locomotor system – [LS]) is mostly connected with deformity of extremities or spine. Among adults the problem is connected with pain and faulty / disturbed ability to walk, difficulties with physical work and in daily living activities.

Material

In years 2013 – 2016 we have examined 201 people. Age of patients – from 2 to 90 years. The biggest group was in age 51–60. On the second place were the patients in age 11–20, 41–50 and 61–80.

Groups of children and adults with deformities and illnesses

The patients coming for consultation / therapy had a single problem but even more frequently complex problems. We have noticed: children with scoliosis – 15 patients, children with bad posture of the shoulders – 6 and changes in upper extremities – 2, with bad posture of pelvis and spine – 12, with bad posture of legs and changed axis of shanks and knees (varus or valgus) – 30 patients. Adults with painful shoulders (in this group some patients with "frozen shoulder") – 14, with pre-arthrosis and arthrosis of hips – 43, with arthrosis of knees or patellar – femoral joint – 22, with problems of feet – 38.

Character of illnesses and relation with age and farmers work

Illnesses of adult patients were connected directly with excessive physical work ad age. Pain in spine and hips was frequently the problem. Some older patients had not only degenerative scoliosis (mostly left convex lumbar scoliosis) but also spondylolisthesis. The age of this group was 51–60 years. These people worked physically and shown exactly overstress in locomotor system. Some people that were not treated for the dysplasia of hip, varus or valgus deformity of legs in childhood – experienced pain in hips and spine in adulthood.

Advising physiotherapy

To relieve the pain and improve the general physical abilities, we had to advise the kinesiotherapy and physiotherapy – like diadynamic, laser, criotherapy and special gymnastics. Advice concerning standing, walking and the manner of throwing objects (not ahead, but to the side) in agricultural work was essential. The therapy was on the spot, this is to say in Rehabilitation Department in Medical Centre in Łaszczów (south – east from Zwierzyniec). Some patients were operated in Orthopaedics Departments in Zamość or in Lublin but plenty of them suffer because of pain as before (example – lady patient from Hungary, living in Poland 18 years).

Discussion and conclusion

It is important to fully cure children as a prophylaxis before adult illnesses. Adults – in problem of spine and hips, it is important continue the rehabilitation treatment constantly – days and nights (special position of sleeping). All patients should remember to change the position of standing, walking, sitting and the position of resting during the day and in the night.

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ABSTRACT

HEALTH CONDITION OF THE POPULATION OF POLAND: A STUDY BASED ON THE EXAMPLE OF ORTHOPAEDIC PATIENTS ATTENDING THE REHABILITATION OUT-PATIENTS DEPARTMENT OF THE MILITARY HOSPITAL IN LUBLIN IN YEARS 2013–2015

Kędzierski Zbigniew, Karski Tomasz, Słowińska Beata, Kowalska Agata, Boryga Bartosz (Lublin, Poland)
1st Clinical Military Hospital and Policlinic in Lublin, Poland
E-mail: t.karski@neostrada.pl

Key words: health condition – Lublin, Poland – aging of population – age related problems – hip – spine – knee – foot – shoulder.

Introduction

In the 20th and the 21st century the population of Europe has become older than before. Due to this, the main aim of the contemporary medicine has also changed. It is possible to arrive at the conclusion that new treatment and prophylactic methods should be introduced both into orthopaedics and rehabilitation. It has been discovered that many illnesses have their beginning in the childhood, that is, in the time when the deformities and illnesses first appear to last for the rest of life.

Population of Poland. Data

In the year **1980,** 701553 children were born, and out of this number 99,2% were alive. This number constituted 695759 children; 357117 boys and 338642 girls. In **2014** 376501 children were born, and out of this number 99,6% were born alive. This number included 375160 children – 193798 boys and 182703 girls. In the years between 1**980** and **2014** the growth rate was systematically decreasing. At the same, the number of older people in Poland was increasing.

Material from the Out Patients Rehabilitation Department collected in the years 2013–2015.

In **2013** we have admitted 154 patients (women 115, men 39). In **2014** we have admitted 146 patients (women 111, men 35). In **2015** we have admitted 171 patients (women 120, men 51). In total in the years 2013–2015 we have treated 471 patients. The majority of the patients (80%) were obese. Due to the obesity, in addition to orthopaedic consultations, the patients were also treated by other specialists such as internists and surgeons and their problems included: diabetes mellitus, hypertension, angina pectoris, blood circulation disturbances in the lower extremities, and sometimes significant trophy changes in the skin.

The characteristics of the illnesses in all groups of patients.

Childhood – hip problems – in **2013** we treated 7 children aged from 0 – 9. There were 3 girls 3 and 4 boys. In **2014** we treated 1 child – a girl. In **2015** we also treated 1 child – a girl.

Youth and adults – hips problems – in 2013 we treated 30 patients – women 20, men 10. In **2014** we treated 12 patients – women 7, men 5. In **2015** we admitted 37 patients – women 26, men 11.

Childhood – spinal problems – In **2013** we examined 11 children – girls 9 , boys 2 . In **2014** there were 7 children – girls 5, boys 2. In **2015** there were 6 children – girls 2, boys 4.

Spinal problems in the older patients. In **2013** we treated 96 patients: women 96, men 26. In **2014** we examined 86 patients: women 66, men 20. In **2015** there were 91 patients: women 65, men 26.

Childhood – knee problems – In **2013** we observed 15 patients: girls 9, boys 6. In **2014** we treated 7 patients: girls 5, boys 2. In **2015** there were 10 patients: girls 9, boys 1.

Adults – knee problems. In **2013** there were 24 patients: women 17, men 7. In **2014** there were 43 patients: women 33, men 10. In **2015** there were 50 patients: women 42, men 8.

Shoulder related problems. In **2013** there were 16 patients: women 10, men 6. In **2014** there were 23 patients: women 15, men 8, In **2015** there were 10 patients: women 4, men 6.

Foot related problems in children and in youth

In **2013** there were 13 patients: girls 8, boys 5. In **2014** there were 4 patients: girls 4, boys 0. In 2015 there were 14 patients: girls 8, boys 6.

Foot in adults. In **2013** there were 20 patients: women 16, men 4. In **2014** there were 32 patients: women 18, men 14. In **2015** there were 22: women 15, men 7

Professional background of the patients

Among the patients there were different professions such as: a driver, a car mechanic, an office worker, a tailor, a cook, a builder and a farmer. More than 80 % of patients were aged 60 – 70.

Previous treatment of the patients

The previous treatment of the patient mainly based on pharmacotherapy and physiotherapy. The effectiveness of such therapy was limited to a short time. After pharmacotherapy the patients reported gastric side effects connected with their medications. 10 % of patient were operated in another hospitals. During the consultations in the Out-Patients' Department they complained of pain and postoperative complications. The therapy recommended in the Outpatient Department relies mainly on physiotherapy and kinesiotherapy. The greatest effectiveness for spine was proved by massage and kinesiotherapy. The recommended therapy for the elderly, that is aged 60 to 80, should be stretched over a longer period of time. It also it should be regular, that is repeated for many times and for many years. 90 % of patients undergoing the type of therapy recommended in our Outpatients' Department, reported a significant improvement of motor functions and a relief of pain.

Conclusion

Polish population has been aging, and patients have been complaining of pain and insufficiency in hips, spine, knees, feet and shoulders. It shows a certain phenomenon that is: the older you get, the worse is your ability to walk, to stay active at home and at work, the more you suffer from spinal and hip pains. The majority of the patient reporting age-related problems and pain were not fully cured in the childhood for the following problems: dysplastic hips, crura vara, knee valgus deformity. For a similar situation observed in the rural areas of Poland – see a lecture from the Medical Centre in Łaszczów.

ABSTRACT

DRILLING EPIPHYSIODESIS AS A METHOD OF CHOICE FOR KNEE DEFORMITY AND LOWER LIMB DISCREPANCY CORRECTION – LONG TERM RESULTS

Zemková Daniela[3), 1)], Myslivec Radek[4), 3)], Petrasova Sarka[3)], Valesova Monika[2)], Firytova Rita[2)], Marik Ivo[2), 3)]
(Prague & Pilsen, Czech Republic)
[1)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
[2)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic
[3)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[4)] Orthopaedic and Traumatology Department, Hospital Pribram, Czech Republic
E-mail: dezem@email.cz

Key words: anthropological prediction, remaining growth of lower extremities, lower extremities length discrepancy, tibio-femoral angle, timing of drilling epiphysiodesis

Introduction

The aim of our contribution is to summarize and generalize our long-term experience with treatment of leg length discrepancies and angular deformities correction by epiphysiodesis i.e. mini-invasive surgery

Disruption of growth plate gives building of the bone bridge (partial or total) and the premature termination of growth of the long bone. Length discrepancy is corrected by continuing growth of the shorter side. Hemi-epiphysiodesis (HE) is used for valgosity and/or varosity correction.

Accurate prediction of the discrepancy, assessment of bone age and sexual maturity and the right timing of this surgical procedure by means of experienced prediction of remaining growth are required for the successful equalization of the extremities and/or angular deformity correction.

Methods

Almost twenty years we use modified Macnicol´s technique of drilling epiphysiodesis (Macnicol and Pattinson 1992).

Prediction method combines auxology, anthropometry and radiology (Shapiro 2001, Tanner, Healy et al. 2001, Zemková and Mařík 2007) using remaining growth prediction of the lower extremities by Anderson, Green, Messner (1963) and bone age by Greulich Pyle (1959) and Tanner Whitehouse 3 (Tanner, Healy et al. 2001).

Firstly, we evaluate the results of surgery of 42 children with lower extremities length discrepancy (LELD) comprising congenital limb defects, bone dysplasias, vascular anomalies, consequence of inflammation, injury of growth plates and/or result of neurologic diseases. The second group contains 28 patients with axial knee deformities. (15 patients idiopatic, 8 patients with bone dysplasias and/or dysostoses with relatively „normal" body height and proportionality and 5 patients with bone dysplasias with severe growth retardation).

Results

We proved that the remaining growth data by Anderson, Green and Messner (1963) are enough precise for the Czech population.

1st group: Average predicted abbreviation in our group was 2.7 cm (1.5–7 cm), final shortening was 0.8 +/– 0.6 cm (0 – 2.5 cm). The reason of insufficient correction was late indication of surgery. Most of these patients were referred to our department at the age when the remaining growth could not fully equalize the discrepancy. Improvement of the prediction method and earlier indication

of surgery gives better results (2005–2015). 25 patients had predicted discrepancy lower or equal 2.5 cm. The LELD 2 cm must be solved by epiphyseodesis at the bone age 12.3–12.5 years in girls and 14.2–14.4 in boys.

2nd group: The results of hemi-epiphyseodesis were excellent in patients with normal growth dynamics. Mean intermalleolar distance was 7.9 cm before surgery and 1 cm after surgery. In most patients surgery was done only on femur, predicted remaining growth was 1.6 $\pm$ 0.5 cm, tibiofemoral angle changed by 7.1 $\pm$ 3.5 °. In patients with bone dysplasias the prediction of the remaining growth is difficult. Hemi-epiphysiodesis gives good results treating valgosity but the the results of varosity treatment were insufficient.

Conclusions

The drilling epiphysiodesis (by modified drilling Macnicol method, 1992) is a mini-invasive safe method of choice as for correction of LELD (from 2 to 6 cm) as for correction the around knee deformities (knock knees or bow legs) in growth period. We proved that the remaining growth data by Anderson, Green and Messner (1963) are enough precise for the Czech population. Individual follow-up of growth from the beginning of puberty is emphasized.

In the right time indicated HE results to excellent correction of tibio-femoral angle.

Worse results were gained in patients with difficult prediction of remaining growth (severe bone dysplasias and varosity) but also in these patients this method can be used as a part of complex therapy.

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ABSTRACT

HEMI-EPIPHYSIODESIS AS A SUITABLE METHOD ALSO FOR CRURA VARA IN ACHONDROPLASIA AND HYPOCHONDROPLASIA: TWO CASE REPORTS

Petrasova Sarka[1)], Zemkova Daniela[1),3)], Myslivec Radek[4),1)], Marik Ivo[2),1)] (Prague & Pilsen, Czech Republic)
[1)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[2)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
[3)] Orthopaedic and Traumatology Department, Hospital Pribram, Czech Republic
[4)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic
E-mail: SarkaPetrasova@seznam.cz

Key words: achondroplasia, hypochondroplasia, hemiepiphysiodesis, anthropometry, varosity, crura vara, varus heel

Achondroplasia (ACH) and Hypochondroplasia (HYPCH) are the most common bone dysplasias (BD), characterized by short disproportionate stature (with extremities disproportionately short for the relatively normal-sized trunk). According to X-ray evaluation ACH and HYPCH belongs to the bone dysplasias with predominantly metaphyseal impairment .

The typical phenotype of these two diseases is related to a disturbance in endochondral bone formation, due to a point mutation (4p16.3) in the fibroblast growth factor receptor-3, which manifests with damage of endochondral ossification. The clinical picture of ACH is well-known. Hypochondroplasia is similar to achondroplasia. There is a wide range of clinical severity ranging from a phenotype similar to achondroplasia with severe short stature, to mild skeletal abnormalities.

A case report documents the treatments of biomechanically severe varus knee and leg in girl with HYPCH and a boy with ACH.

Case 1: Girl with HYPCH : mutation ACC (Asn540)> AAA (Lys) in exon 13 *FGFR3*. Short legs, crura vara and varus heel. At the age of 12.5 years (bone age 10.5 years) drilling permanent epiphysiodesis of distal fibula and partial lateral epiphysiodesis of distal tibia in order to correct the varus heel. Expected remaining growth of distal tibia was in healthy children 1–1.5 cm, in HYPCH we supposed 0.5–0.7 cm. Prediction of remaining growth of the lower extremities in HYPCH is very uncertain, therefore we used temporary hemi-epiphysiodesis of proximal tibia with eight-Plate Guided Growth System to correct varus knee. Twenty two months after surgery the heel angle was completely corrected. Also the result of hemiepiphysiodesis of proximal tibia was satisfactory – intercondylar distance was 1 cm. Nevertheless, the epiphysiodesis of the right side was less successful than on the left side.

Case 2: Boy with ACH. Drilling permanent epiphysiodesis of distal fibula and partial lateral epiphysiodesis of distal tibia in order to correct the varus heel was performed at the age of 12 years, bone age 11 years. Partial lateral epiphysiodesis of proximal tibia on the right was carried out two years

later. The correction of the heel varus was complete. Mild varosity persists in the right knee region and in a distal third of the right shank.

Discussion and conclusion

Hemi-epiphysiodesis is method of choice for correction of the angular periarticular deformities also in bone dysplasias such as achondroplasia. We have excellent results especially in the treatment of varus heel. In the knee region, the lateral partial epiphysiodesis used to correct varosity gives less favourable results than medial epiphysiodesis in valgosity treatment. In patients with bone dysplasias with severe growth retardation we must calculate with the slow growth velocity and reduced remaining growth. The prediction is uncertain and that is a reason for using eight-Plate Guided Growth System at younger age. However, the results of partial lateral temporary hemi-epiphysiodesis of proximal tibia give less reliable results than permanent drilling epiphysiodesis. It is necessary to realize that hemi-epiphysiodesis has its limitations for deformity in the frontal and sagittal planes. Coexistent torsion desaxation (occurring e.g. in metabolic bone diseases, such as hypophosphatemic rickets, osteogenesis imperfecta, severe spondylo-epi-metaphyseal bone dysplasias, etc.) and residual deformity can be individually corrected by osteotomies.

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ABSTRACT

PARTIAL AND TOTAL EPIPHYSIODESIS AS A PART OF RECONSTRUCTIVE SURGERY IN SEVERE LIMB DEFORMITIES

Marik Ivo[1), 2)], Myslivec Radek[4), 1)], Petrasova Sarka[1)], Marikova Alena[1)], Zemkova Daniela[3), 1)] (Prague & Pilsen, Czech Republic)
[1)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[2)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic
[3)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
[4)] Orthopaedic and Traumatology Department, Hospital Pribram, Czech Republic
E-mail: ambul_centrum@volny.cz

Key words: limb deformities,epiphysiodesis, corrective osteotomies, lengthening of extremities

Introduction

Our presentation is focused on partial and/or total epiphysiodesis in different areas of the extremities that were carried out as with the aim of surgical step by step corrections of periarticular deformities of legs or uneven leg length and/or as a part of reconstructive scheduled surgery i.e. lengthening of extremities, corrective or multiple osteotomies, etc.

We present long-term results of reconstructive surgical treatment of three patients where epiphysiodeses were an important part of reconstructive surgery and comprehensive treatment. Treatment of presented cases was monitored by repeated anthropometric measurements during the growth period on photographs and X-rays.

In the end of our presentation we advertise on other exceptional indications of epiphysiodesis in different parts of growing skeleton.

Case 1.

A boy with partial tibial aplasia and mirror foot and flexion contracture of the knee (Mirror – image polydactyly of feet & tibial hemimelia) on the right side was indicated to lengthening by epiphyseal distraction of the proximal tibia and in the second step to lengthening of the tibia by callus distraction. A part of the first surgery was reduction of preaxial polydactyly. To correct a severe shortening of the right shank the boy was fitted with orthoprothesis. Due to residual flexion contracture of the knee and valgosity of the proximal tibia the partial ventral drilling epiphysiodesis of the distal femur and partial medial epiphysiodesis of the proximal tibia were carried out at the bone age 13 years. Functional good result of the reconstructive surgery, partial epiphysiodesis and orthotics is presented on photos.

Case 2.

A girl with fibular hemimelia of the left leg, type IA by Achterman and Kalamchi (1979) underwent lengthening of the left tibia and fibula in 10 to 10.5 years. Predicted shortening of the left leg was: tibia 4.0 cm, femur 2.4 cm, talocalcaneal coalition 2.5 cm – together around 9 cm. Step by step callus stretching-callotasis of the tibia about 70 mm was carried out (velocity of distraction 1 mm per day) with good remodelling of corticalis (cylindrical shape of bone regenerate, type irregular but a good outcome was observed). External fix at or was extracted 6 month after 1st surgery.

In 11 years and 3 months the corrective osteotomy of talocalcaneal coalition was done (a wedge shaped bone graft from os ileum was inserted from lateral side of coalition) with the aim to correct a heel valgosity. In 12 years (bone age 11.5) a partial medial reversible epiphysiodesis of proximal tibia (guided growth method using the 8-plate) and a drilling partial medial epiphysiodes of distal tibia were carried out in one stage to correct valgosity of the proximal and distal tibia.

In 13 years as a last scheduled surgery was made a total drilling epiphysiodesis of the distal right femur with the aim to correct predicted shortening 1.7 cm of the left femur.

Last photos in the age 13.5 years document very good result of combined reconstructive and mini-invasive surgery, i.e. the length and the axis of both legs in knee and ankle level a rein normal range. The present shortening of the left leg about 1 cm should be compensated during remaining growth of the right leg.

Case 3.

A girl with achondroplasia and varosity of the knees and shanks due to overgrowth of the fibulas was indicated to bilateral partial lateral epiphysiodesis of the proximal tibia and total epihysiodesis of the proximal and distal fibula in the age 10 years and 7 months (bone age 9.4). The axis of the left leg and the angle of both talocrural joints were successfully corrected by epihysiodeses. On the right leg the corrective osteotomy of the proximal tibia and fibula was carried out in 13.5 years. We present very good result of partial epiphysiodes on one side and excellent result on the second side after corrective osteotomy.

Discussion

The mini-invasive guided growth surgery is an effective part of reconstructive surgical treatment. According to our experience the total or partial epiphysiodesis can be indicated not only in the frontal plane of knee region but also in sagittal plane, e.g. in patients with flexion contractures of the knee joints (popliteal pterygeal syndrome, cerebral palsy,etc.) and other areas, e.g. ankle joint where we can successfully correct valgosity of the heel and/or varosity (in combination with total epiphysiodesis of the distal and proximal fibula) and also residual equinosity of the calcaneus (e.g. pes equinovarus rebelans, pes equinovarus amnioticus, residual pes equines in arthrogryposis cong. multiplex, etc.). Special indications of the partial epiphysiodesis are Madelung´s deformity

of forearm as a part of partial ulnar deficiency or dyschondroosteosis Leri-Weiland/or multiple hereditary exostoses. Time to time we used drilling total epiphysiodesis as a part of hand or foot reconstruction in cases of macrodactyly or partial epiphysiodesis in phalangeal axial deviations.

In cases of uneven length of humerus we can think on proximal humeral total epiphysiodesis by Macnicol´s drilling technique.

An experimental study should be done to drilling epiphysiodesis of trochanter major for a possible solution of coxa valga subluxans that is often observed in children with cerebral palsy.

An attention should be done to cubitus varus/valgus due to congenital or posttraumatic asymmetric growth of distal humeral epiphysis.

Analogically we should think on appropriate partial or total epiphysiodesis of growth plates of vertebral bodies in cases of congenital spine deformities and/or idiopathic scoliosis.

Conclusions

In cases of bone dysplasias and/or dysostoses is necessary to take into account a congenital growth retardation of extremities. Long-term follow up of the limb growth velocity enables us to correct the individual remaining growth of affected segments and in the right time indicate appropriate partial or total epiphysiodesis as a meaningful part of reconstructive surgery. Anyway, also partial correction of knee and ankle joint axis as in frontal as in sagittal plane is biomechanically significant. From biomechanical point of view, a partial epiphysiodesis causes step by step correction of around knee deformities in the most appropriate level.

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ABSTRACT

DRILLING EPIPHYSIODESIS AS A METHOD OF CHOICE FOR BILATERAL LEG OVERGROWTH: A CASE REPORT

Zemková Daniela[3), 1)], Marikova Alena[1)], Marik Ivo[2), 1)] (Prague & Pilsen, Czech Republic)
[1)] Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic
[2)] Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic
[3)] Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic
E-mail: dezem@email.cz

Key words: tall stature, overgrowth of legs, epiphysiodesis

Introduction

In the past the girls with extremely tall stature were treated by oestrogens. This method is nowadays abandoned due to high risk for side effects, especially proved increased infertility. Today, the epiphysiodesis of the knee joints is recommended as a method of choice for extremely tall stature. Unfortunately, most of these patients take interest in treatment too late – at the age only about 12 years or later. Therefore, the use of epiphysiodesis as a mini-invasive method of choice for shortening of legs is limited.

Case

Our patient is 8.5 years old. The girl is 161.2 cm tall (4.6 SD) with marfanoid disproportional stature but with negative cardiologic and eye examination. Mother is 192 cm and father is 198 cm high. Bone age is not significantly accelerated. Prediction of adult height is cca 192 cm. Epiphyseodesis should be done at the age of 9 years. It would decrease the final height around 9 cm (cca 183 cm in adulthood). Proportionality will be in the range of the norm. At present, the proband is just after surgery.

Conclusion: Epiphysiodesis in the knee region is a reliable and safety method for reduction of the final height in extremely tall individuals. It is suitable especially in children with disproportionally long lower extremities. Significant lowering of final height (5–7 cm) is achievable, if the surgery is performed at the bone age 10 – 11 years.

ABSTRACT

LONG TERM FUNCTIONAL OUTCOME AND COMPLICATION OF USING LIQUID NITROGEN FREEZING FOR RECONSTRUCTION OF LOWER LIMB OSTEOSARCOMA IN CHILDREN

Alam Eldin Mohamed
Sohag Faculty of Medicine, Sohag, Egypt
E-mail: alameldeen125@yahoo.com

Key words: Liquid nitrogen, Osteosarcoma, Children, Lower limb

Introduction

Limb salvage has become the standard practice in the management of osteosarcoma. Limb salvage surgery represents a challenge in skeletally immature patients in whom further growth is anticipated. Several options are available for limb reconstruction in children, we report the long term results of using the freezing technique by liquid nitrogen for treatment of lower limb osteosarcoma in children using different reconstruction techniques.

Method

This study includes 24 children with lower limb osteosarcoma, average age was 13±3.2 y (6–18 y), ten boys. The mean follow-up period was 87.3±44.7 m (28–224 m). In 14 cases the lesion was in the femur, in ten patients it was in the tibia. Joint sparing and intercalary freezing was carried in out in 15 cases, while in five cases, osteoarticular freezing was performed, and a composite technique with a tumor prosthesis was performed in four cases.

Results

Ten patients remained disease-free, eleven patients lived with no evidence of disease, one was alive with the disease, and two patients died of the disease. Five- and ten year rates of survival were 91.76%. Graft five and ten years survival rates were 91.48% and 83.3 % respectively. Function on the Enneking scale was excellent in 19 patients (79.1%), and good in three patient (12.5%), fair in one (4.1%), and poor in two patients (8.3%), mean MSTS score was 25±5.4 (6–30). Mean union time was 8.7 m±2.1 m (6–12 m). Mean MSTS score was higher among children who receive a joint sparing rather than a joint sacrificing resection; 27.2 versus 21.3. Complications were recurrence in three cases (12.5%), all recurrences were from soft tissue, collapse of the osteoarticular graft occurred in two cases (8.3%). Fracture of the graft occurred in two cases (8.3%), nonunion occurred in three cases (12.5%). Leg length discrepancy occurred in seven cases, mean difference was 21.8 mm±8.3 mm (7–31 mm), lengthening was carried out in four cases and finally got had equal leg length, in three cases, shoe lefts were enough.

Conclusion

Reconstruction by frozen bone autograft method is easy, effective, biological, low-cost, immediate mobilization of joints, possible cryo-immune effects, with excellent long term functional outcome and with less complication.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

SURGICAL TREATMENT OF INTRAOSSEOUS BENIGN BONE NEOPLASMS OF THE EXTREMITIES IN CHILDREN AND ADOLESCENTS

Beletski Aleksandr, Shpileuski Ihar, Sakalouski Aleh
Belarusian Research Centre of Traumatology and Orthopaedics, Minsk, Belarus
E-mail: ihar760@gmail.com

Key words: benign bone neoplasms, surgical treatment, mistakes and complications

Surgical treatment of intraosseous benign bone tumors and tumor-like lesions of long bones of the extremities is one of the actual problems of current orthopaedics, especially in patients with incomplete bone growth. Generally, it include three stages: an excision of pathologic focus, grafting and compensation of bone strength.

Materials and methods

We have performed the retrospective study of the features of surgical technique, mistakes and complications in 219 patients (2–18 y.o.), who were cured in our clinic during last 15 years (2000–2014). There were 28 patients with chondromas (including 15 with Ollier disease), 16 – with non-ossifying fibroma, 12 – with giant cell tumor, 126 – with bone cysts (including 36 aneurismal) 37 – with fibrous dysplasia (including 8 with Albright disease).

In all these cases we performed one of three types of bone resection: segment (22), sector (33) or intra-lesion (164). The segment resections were executed in patients with non-ossifying fibroma (1), giant cell tumor (4), bone cysts (11, including 8 aneurismal) and fibrous dysplasia (6); the sector resections – in cases of chondroma (4), non-ossifying fibroma (9), giant cell tumor (3), bone cysts (6, including 1 aneurismal) and fibrous dysplasia (11), and the intra-lesion ones – in patients with chondromas (24, including 15 with Ollier disease), non-ossifying fibroma (6), giant cell tumor (5), bone cysts (109, including 27 aneurismal) and fibrous dysplasia (20, including 8 with Albright disease).

Results

The most traumatic type of bone resection is the segment one. So it was performed only in cases of sub-total bone neoplasm involvement, when the total excision of tumor without bone continuity

infraction was impossible (10,0% totally). In these cases an existence of extra-osseous tumor component and the thickness of non-involvement bone walls less than 1,5–2 mm around the lesion were confirmed by CT or MRI. So as a result, the segment resections were usually performed in cases of such potentially aggressive neoplasms as giant cell tumor (33,3%), aneurismal bone cysts (29,6%) and fibrous dysplasia (16,2%).

The sector resections were performed only in several cases (15,1% totally), when the excision of pathologic lesion may be performed within unaffected bone and soft tissues: the most frequently in non-ossifying fibroma (56,3%), fibrous dysplasia (29,7%) and early stages of giant cell tumor (25%).

The most frequent executing type of resection was intra-lesion – 74,9% of all cases: in bone cysts – 86,5% (aneurismal – 75%, simple – 91,1%), chondromas – 85,7%, fibrous dysplasia – 54,1%, giant cell tumor – 41,7% and non-ossyfying fibroma – 37,5%.

The surgical technique of segment resection was routine: we isolated the affected bone segment from surrounding soft tissues sub- or aperiosteally (it depended on the presence of extra-osseous tumor component, the thickness of residual cortical bone over the neoplasm and its diagnosis). Bone cut was performed 0,5–1,5 cm indent from visualized tumor borders, its margins was ablated with thermal and (or) chemical agents. Bone defects were filled with massive perforated allografts (20 cases, 90,9%) or with the segment of autologous fibula (2 cases, 9,1%). The osteosynthesis in all cases was performed according AO rules. We had only one case of intraoperative mistake – bone axis malalignment after femur resection; in 7 cases (ABC and GCT) in 1–1,5 years after operation the growth pate arrest and extremity shortening were recorded. X-ray signs of bone grafts integration and restructuring were registered in cases of auto-grafting in 12–15 months, and in allo-grafting – in 23–25. There were no cases of neoplasm recurrence after sector resection.

The surgical technique of sector resection was also routine – an affected bone surface was isolated from surround soft tissues, bone cut was performed with saw (in most cases) or osteotome, about 0,5 cm indent from visualized tumor borders. Usually we cut the bone out of the pathologic lesion, but in some cases, when it was more than a half of bone circumference, we had to cut the "rear" wall of it across the tumor and additionally remove residual pathological tissues using osteotome; all the margins were also ablated.

The surgical technique of intra-lesion resection was routine too – an affected bone surface was isolated, and a hole into the lesion was made using saw or osteotome. After curettaging the cavity and removing all pathological tissues we took off 1–3 mm of bone cavity walls using high-speed cutter and opened medullary canal; than we performed an ablation of all margins.

When the bone defect length after segment or intra-lesion resection was less than quarter of bone diameter and its width – less than 45 degrees, or we had some doubts in diagnosis or suspection on infection, we did not use any grafts (34 cases, 17,3%). In other 163 cases bone defects were filled with autografts (6 cases, 3,7%) or allografts (159 cases, 96,3%). When defect was large, especially after sector resections, we used massive cortical (9 cases, 5,7%) or sponge ones (27 cases, 17,0%). In

other situations we used cortical (18 cases, 11,3%) or sponge (81 cases, 50,9%) bone chips, and in 24 cases (15,1%) – the combination of massive cortical allograft and sponge bone chips. After filling the cavity with bone chips we closed the hole with thin cortical bone "flap" to prevent migration them into surround soft tissues.

It is well-known, that all kinds of bone resection decrees its strength, that may cause pathological fracture. The compensation of such decrement may be provided by limitation of weight-bearing, immobilization or bone reinforcement with AO plates or nails. The choice of method of bone strength compensation was carried out using our original PC program, bone reinforcement was performed in 12 patients (7,7%). There were no any significant intraoperative mistakes or complications recorded in our cases.

X-ray signs of bone grafts integration and restructuring were registered in cases of sponge autografting in 4–7 months, cortical massive allografting – in 23–25; massive sponge – in 16–18, cortical chips – in 22–24, and sponge ones – in 9–11 months.

The postoperative lysis of affected bones and grafts was registered in 5 cases (chondroma – 4, non-ossifying fibroma – 1), pathologic fracture – in one (GCT), and recurrence – in 11 (5 – chondroma, 6 – bone cysts). We think, that the main reason of bone and graft lysis was the trophic disorders caused by elevated traumatic surgery (iatrogenic). Pathologic fracture was caused by inadequate bone strength compensation after resection – rejection of reinforcement. And we find the only one reason of neoplasm recurrence – inadequate resection.

Discussion

The analysis of features of surgical technique, mistakes and complications in our patients show, that the best results may be occur when the surgeon strictly observe operative technology: complete removal of tumor tissues and its theca, adequate grafting and compensation of bone strength (limited weight bearing, immobilization or bone reinforcement).

ABSTRACT OF ORIGINAL PAPER

DIASTROPHIC DYSPLASIA: REVIEW AND A CASE REPORT

Marik Ivo[1), 2)], Zemkova Daniela[2), 3)], Kuklik Miloslav[4)], Krepelová Anna[5)], Kozlowski Kazimierz[6)], Povysil Ctibor[7)] (Prague, Czech Republic)

1) Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic

2) Faculty of Health Care Studies, West Bohemia University; Pilsen, Czech Republic

3) Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic

4) Genetic Dept.; Czech Republic, Prague 3; Czech Republic

5) Dept. of molecular genetics, Institute of biology and medical genetics, University Hospital Motol; Prague; Czech Republic

6) New Children Hospital, Westmead, Sydney

7) Institute of Pathology, 1st Faculty of Medicine, Charles University, Prague, Czech Republic

E-mail: ambul_centrum@volny.cz honza.kuklik@volny.cz

Key words: Diastrophic dysplasia, variant of diastrophic dysplasia, diagnostics, pathomorphology, molecular genetics, orthopaedic surgery

Summary

The authors try to give a short review of knowledge on Diastrophic dysplasia (DD). Chief clinical manifestation and radiologic features are demonstrated on archive pictures from Ambulant Centre for Deffects of Locomtor Apparatus in Prague as well as primary histological and electronmicroscopical investigations. DD is a generalize disorder of cartilage tissue distinguished in perinatal period by short limbed dwarfism, clubfeet and abnormal thumbs, deformity of external ears, progressive scoliosis, small femoral head centres, epiphyseal invaginations and joint contractures. Mutations in gene DTDST (more than 30) cause synthesis of insufficiently sulphated proteoglycans in chondrocytes and fibroblasts. Consequence are generalized mesenchymal disorders that belong to a family of bone dysplasia. It contains two lethal diseases with severe and a mild involvement. A mild cases are called as a variant of DD or autosomal recessive multiple epiphyseal dysplasia.

On a case of DD variant the chief clinical and roentgen manifestation and long term result of the surgery of both hip joints is exposed. Original finding is molecular genetically proved so pathogenic variant of gene SLC26A2: c.532C>T p. (Arg178Ter) in exon 2 as most likely pathogenic variant c.1343>T p. (Ser448Leu) in exon 3. Our patient is a compound heterozygot of mentioned mutations in gene SLC16A2. Both established variants are greatly presumable molecular cause of autosomal recessive variant of DD and correlate with phenotype of the proband.

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ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

EVALUATION OF PATIENTS WITH IDIOPATHIC SCOLIOSIS TREATED WITH THORACOLUMBAR BRACE

Kwiatkowski M[1)], Guszczyn T[1)], Maksimowicz M[1)], Milewski R[2)], Popko Janusz[1)]
[1)] Department of PaediatricOrthopaedics and Traumatology, Białystok, Poland.
[2)] Department of Statistics and Medical Informatics, Białystok, Poland.
E-mail: jpopko@umwb.edu.pl

Key words: Idiopatic scoliosis, 25–45° curvature by Cobb, thoracolumbar brace treatment

Introduction

The most efficient, non-surgical method of idiopathic scoliosis treatment within 25–45 curvature according to Cobb's is treatment with orthopaedic braces. The aim of this work was to control patients respect to doctors' indications concerning the time patients should spend wearing the orthopaedic braces, patients self-perceived health status and the problems occurring in patients with idiopathic scoliosis.

Materials and Methods

75 patients aged between 9 to 18 (80% females) treated for adolescent idiopathic skoliosis with thoracolumbar brace were asked for filling the survey titled ''The quality profile of life with spine deformity''. Received results were subjected to statistical analysis.

Results

Child's brace-wearing compliance counted 23h/day amounted 70% average. The vast majority of patients – 70 (94%) was satisfied with the treatment method and its results. Pain ailments of about 4 pts (VAS scale) were a complaint of 35 patients. Excoriations occurred in 70% of examined patients. We didn't ascertain a compelling correlation between time of brace-wearing per day, pain occurrence (p=0,18) and excoriations. In the 11 patients (8,25%) showed significant progression of the scoliosis. In these patients, correction of scoliosis was performed according to the method Cotrel – Dubousset.

Conclusions

High awareness of badly formed posture among the examined group is a valid factor which increases proper evaluation of progress and treatment method. The amount of brace-wearing hours per day is not relevant to pain ailments and excoriations, vital is the appropriate fitting of the brace to a given patient.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

RESULTS OF TRIPLE PELVIC OSTEOTOMY IN CHILDREN WITH PERTHES DISEASE

Sakalouski Aleh
State Institution «Republican Scientific and Practical Centre of Traumatology and Orthopaedics», Minsk, Belarus
E-mail: sakalouski@yandex.by

Keywords: Perthes' disease, adverse outcome, triple pelvic osteotomy, principle of «matrix modeling»

The adverse outcome of Perthes' disease occurs in 50% of cases due to the development of subluxation and deformity of the femoral head.

We use our own operative technique of triple pelvic osteotomy (TPO) for treatment of severe cases of Perthes' disease. Its advantages are: the only one approach (Smith-Petersen), pelvic bones osteotomies without detachment of the periosteum, use of ischium osteotomy-octeoclasy, pubic paraacetabular osteotomy, angle-shaped ilium cut line, minimal pelvic muscles damage, avoidance of direct contact with large nerve trunks and vessels.

We performed 41 TPO in 40 patients aged from 4 to 15 (average age – 10 years). The indication for TPO was femur subluxation. The operation was performed on disease stage 2 in 5 patients (12.5%), on stage 3 – in 18 (45%), on stage 4 – in 7 (17.5%), on stage 5 – in 10 (25%).

In all cases stability of a joint is restored. The Wiberg angle increased, on the average, from 15 up to 36°, the index of the acetabulum-femoral head – from 72 up to 100.

TPO prevented deformation of the femoral head at early stages and resulted in the remodelling by spherical acetabulum. During the following three years the average value of the epiphyseal quotient increased from 56,7 ± 12,01% to 75 9 ± 13,4%, the mean epiphysis-column quotient increased from 72,6 ± 9,9% to 83 ± 12,24%. According to Stulberg 17 joints (74%) were assigned to class 1–2, 6 joints (17%) – to class 3–4, no joints – to class 5. In all cases clinical results were positive.

So, at early stages of Perthes' disease TPO provides realization of the principle of «matrix modelling» and improves the form of the femur proximal part and at later stages of the disease it restores stability of the hip joint.

ABSTRACT OF REVIEW

INDICATIONS OF TRUNK AND EXTREMITY ORTHOSES IN CLINICAL PRACTICE

Krawczyk Petr
PROTEOR CZ I.l.c., Ostrava, Czech Republic
E-mail:krawczyk@proteorcz.cz

Key words: orthoses indications, upper limb orthoses, lower limb orthoses, trunk orthoses

Application of orthosis is an integral part of complex care within interdisciplinary collaboration across clinical fields. For the success of orthotic care is necessary to precisely define the functional requirement for aid in the whole context of treatment in terms of timing of application, purpose of use, mechanism of action and the function of the orthosis itself. To meet this requirement is an essential condition of communication between members of the therapeutic team. Of course there should be cooperation with the patient and checking the functionality of aids prescribed by a doctor and treating physiotherapist or occupational therapist. The author in his presentation will be familiarized with the technical overview of the limbs and torso orthoses. It approximates the procedure for functional indication and choosing orthosis.

1. Functional indications for orthoses

Indications of orthosis based on the assessment of functional impairment of the patient, assessment of the muscle test, walking stereotype, grip,evaluating of self care. For non-problematic application of the orthosis is important the motivation of the patient and the real possibility of the use of aids. The failure of the application of orthosis often based on inadequate definition of the problem, unclear functional requirement, which we want to achieve and not least, unrealistic expectations of final effect due to the technical possibilities of the aids or orthosis acceptability for the patient. Indication composure should include a precise specification of functional requirements which we want to achieve with the orthosis and determination of the required structural design. During the final decision making we consider if the constructional design of the serial orthosis or individual orthosis meets the needs of the patient or if it is even possible to manufacture it. Consideration of the financial requirements of orthotic therapy it must be based with the total contribution of orthosis, which may be reduced time of hospitalization, facilitation of rehabilitation, significantly reducing the dependence of users on other person or social services

2. Determination of the functional requirement of orthoses

Corrective action – a requirement for the influence acquired and congenital deformities of limbs or torso when we try to manipulate to certain morphological or functional status with gradual correction.

Immobilization – extremity fixation following trauma or inflammation.

Mobilization of the joint – refers to the requirement, in which we try to achieve magnification of the range of the motion, such as influencing contracture, conditions after surgery on tendons. **Stabilization** – it provides the movement of the joints in the acute or chronic articular instabilities that the joint.

Support function – support of muscle function, segment derotation, etc.

Retention function – requiring correction of the limbs

Function of unloading – compensation or support of extremity weight bearing function (functional treatment of fractures) and skeletal destruction within Charcot arthropathy.

3. Lower limb orthoses

Due to the supporting function of the lower limbs, which performs functions in addition to static and dynamic function, the selection of appropriate functional orthosis for the patient is very important. When indicating the aid we start from assessing functional status limb assessment of weight bearing, range of motion and stability in individual segments, muscle strength, possible shortage of a limb, based on functional requirement, we choose structural solutions in the form of serial or individually manufactured equipment, the indication orthosis use international classification lower limb orthoses.

4. Upper limb orthoses

For good therapeutic effect of the orthosis it is important precise specification of the orthosis. During the prescription its always necessary to specify the scope and effect of the orthosis segment according to the international classification. In some cases, the physician should specify the structural arrangement regarding the placement of fixed part of orthoses (braces placement and reinforced knee brace to volar, dorsal, ulnar or radial surface of the forearm).

5. Trunk orthoses

Applications of trunk orthoses is an integral part of treatment for many problems associated with the instability of the axial skeleton, after traumas or during the treatment of spinal deformities. Treatment of spinal deformities during childhood is reserved individual trunk orthoses. These aids should be indicated only by experienced doctors in centres dealing with the treatment of scoliosis. Production of corsets for scoliosis treatment belong to a prosthetic workplace only. Each patient must consistently learn about the regime of use of the body brace.

Conclusion

Successful treatment and application of orthosis depends on correct and timely indication and selection of equipment, which must respect the individuality. The condition is indicative

of a close interdisciplinary cooperation doctor, orthotics – prosthetics, rehabilitation worker and the patient. Only this cooperation will ensure a much needed feedback on the use of the device and any changes in health status that require adjustment of the therapeutic process. During the considering the application of orthosis we have to start with the overall contribution, which may be reduced hospitalization, facilitation of the rehabilitation and significant reduction in the dependence on help of the users on the other people.

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ABSTRACT OF REVIEW

INDICATIONS OF LOWER AND UPPER LIMB PROSTHESES

Krawczyk Petr
PROTEOR CZ l.l.c., Ostrava, Czech Republic,
E-mail: krawczyk@proteorcz.cz

Keywords: lower extremity prosthesis, level of user activity, upper limb prostheses, upper limb amputation, myoelectric prosthesis, indications

The author gives a basic technical overview of the distribution of prosthesis of upper and lower limbs. It constitutes a basic indication criteria for prostheses lower and upper limbs.

1. Indication of lower limb prostheses

Functional indication is used to optimise the technical design of the prosthesis, and that is based on the expected level of activity of the user. Technical design of the prosthesis based on the functional indications should be the result of a decision of the multidisciplinary team (doctor, physiotherapist, prostetic technic, biomechanic, ...).

1. 1 Determination of the expected degree of users activity

We decide on the basis of the collected information:

- Age of the patient

- Etiology amputation
- Results of the clinical examination
- Previous physical activity (exercise tolerance assessment during rehabilitation).
- Current disease
- Interests and hobbies (possible sources of motivation for patient to walk).
- The need to overcome barriers in home (stairs, hilly terrain).

1. 2 Required skills for future users of the prosthesis

Activity level 1: Interior type.

The required capacity of the patient during an examination without a prosthesis

- Must be able to independently get out of chair to bed.
- Stand with minimum support of the upper limb.
- The patient must be able to independently move from chair to bed.
- Walking on crutches without a prosthesis with physical limitations (which may vary depending on user's condition).
- The patient can also use a mechanical wheelchair (MW) into the exterior.

Required skills during examination of the patient with prosthesis

- Walking on uneven bars with an interim prosthesis without the presence of dyspnea or increased fatigue during the examination.
- The user is only able to walk around the apartment.
- Unable to overcome any barriers.
- Walking slowly at a constant speed.
- Walking with crutch.

Activity level 2: Limited exterior type.

The required capacity of the patient during an examination without a prosthesis

- Walking with the support of a crutch when not wearing prostheses virtually without restriction.
- The patient can be simultaneously equipped with MW for overcoming bigger barriers.

Required skills during examination of the patient with prosthesis

- The ability to walk outdoors at a constant speed in coping with smaller barriers (Stairs, slopes).
- Walking with support and without a support of a crutch.

Activity level 3: Unlimited exterior type.

The required capacity of the patient during an examination without a prosthesis

- Does not use MW
- Crutches can be used as a support for the relief of the contralateral limbs bearing joints in arthritis or in case of technical defect prosthesis.

Required skills during examination of the patient with prosthesis

- The user is able to walk at a variable speeds
- Manages all barriers.
- Is capable of certain business activities.

Activity level 4: High performance users.

The required capacity of the patient during an examination without a prosthesis

- does not use MW, uses crutch in case of technical problems of the prosthesis.

Required skills during examination of the patient with prosthesis

- High demands on the prosthesis due to daily load, which exceeds the normal user load prosthesis.
- Higher shock load during sports and physically demanding activities (athletes and children).

1.3 The activity level of prosthesis user, therapeutic aim and constructional design

Constructional design of the prosthesis comes from the presumed level of activity

2. Indications of upper limbs prostheses

2.1 Distribution of the prostheses of a upper limb by function

According to the prosthesis functions are divided on *passive* and *active.*

Passive prostheses

- Cosmetic Prostheses
- The mechanical passive prostheses

Active prostheses

Operated under its own power

- Tension
- The modified stub (Krukenberg, Vanghetti – Sauerbruch)
- Untreated stump (pronation supination motion)

Operated by an external force

- Myolectric (formerly also used pneumatic and electric prostheses)

Operated by combining forces – Hybrid

- Tension control of the elbow, wrist myoelectric control

2.2 Indicative criteria for upper limb prostheses

Prostheses passive – without locking grip

- They are indicated as cosmetic prostheses to ensure the adaptation of tissue stump of a limb of the pressure and tension forces acting on the prosthesis during deployment on the stump.

Mechanical prosthesis, passive grip (controlled by healthy hands, working handpiece)

- Active users of forearm type of amputation performing demanding physical activities with carrying heavier loads. The other hand must be healthy.

Prostheses tensile active grip

- The user uses a prosthesis every day during normal activities.
- Carrying loads and weight is affected by the type of terminal of the prosthesis (technical parameters given by the manufacturer of a particular component).

Myoelectric prosthesis (hybrid)

- According to the current legislation, there is the possibility of applying myoelectric prostheses only in patients with bilateral upper limb amputation or unilateral upper limb amputation with disabilities of grasping function of the upper limb.
- The condition for the prescription version of the device is examined by a psychologist, rehabilitation physician and orthopaedic prosthetics in order to assess the patient's psychomotor skills to control the myoelectric prosthesis.

2.3 Application of upper limb prostheses for children

Upper extremity prosthesis in paediatric patients (congenital defect of upper limb) in the first year of life is used primarily to provide support when climbing on all fours, while verticalization. The most important functions in the following period, in addition to compensation cosmetic appearance,

ensure active grip and allowing bimanual activities. One of a neglected features of the prosthesis during upper limb unilateral defects (congenital or acquired) is the replacement of the missing mass of limbs. Asymmetric upper limb mass during growth leads to the development of spinal deformities (i.e. A static scoliosis).

Basic recommendations for the indication and application of myoelectric prostheses for children aged 2–5 years

- condition of the indication is communicativeness and the ability to follow instructions of strangers
- motivation of a child to use the prosthesis
- tendency for the mutual use of the upper limbs
- support of parents to ensure that subsequent educational program besides the rehabilitation
- ensuring the payment of utilities with the prospect of continuous equipment for the child
- providing professional multidisciplinary team (rehabilitation, prosthetics)
- technical support to provide very fast and efficient maintenance or repair
- little kids are able to use a myoelectric prosthesis in any situation
- construction parts of myoelectric prosthesis does not allow some physical activity (climbing trees, grip myoelectric prosthesis while hanging on playgrounds etc.).
- may cause relatively rapid wearing out and the need for more frequent repairs
- equipping child with second – passive (working) prosthesis, which allows to carry out activities which could lead to significant wearing out myoelectric prosthesis (possibility of contamination, carrying heavier loads and cosmetic damage to housing aids)

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ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

LONG-TERM RESULTS OF POSTERIOR FEMORAL ROTATIONAL OSTEOTOMY AT CHILDREN WITH DDH

Sakalouski Aleh
State Institution «Republican Scientific and Practical Centre of Traumatology and Orthopaedics», Minsk, Belarus
E-mail: sakalouski@yandex.by

Keywords: multiplane deformity of the femoral head, children, DDH, posterior femoral rotational osteotomy

Multiplane deformity of the femoral head in children with DDH is a serious problem.

We used our own technique of intertrochanteric osteotomy with posterior 45–90° rotation of the proximal part of the femur in the 52 cases (50 patients) in children (aged from 3 to 18 years).The aims of the operation were: elimination of load on a deformed superior segment of the femoral head, restoration of the femoral head centralization and articular surface congruity, normalization of the greater trochanter position, lengthening of the femoral neck.

The results were studied with the mean follow-up of 8.1 years (5–25 years) after the operation. The mean value of the epiphyseal quotient increased to 81 against 53 and the epiphyseal-neck quotient – to 87 against 61 before the intervention, the neck-diaphyseal angle became 130° after the operation. Before the operation Wiberg angle was equal to 20–25° only in 10 cases, after – it became 20–40°(average 30°) in 41 cases. In case when Wiberg angle was less than 20° rotational osteotomy was complemented by the operation on the pelvis (5 triple pelvic osteotomies, 3 Salter osteotomies, 2 Chiary osteotomies, 1 acetabular plasty). According to Severin system (modified by Ziots) the radiological results were as follows: 13 joints are referred to group I, 28 – to group II, 7 – to group III and 4 – to groups IV–V. The clinical results were assessed according to McKay's system, modified by Zionts, good and excellent results were registered in 46 cases (88 %).

The merits of the intervention are: reorientation of the femoral head in three dimensions, absence of angle deformities and negative influence on the growth plate of the femoral head, lengthening of the femoral neck and limb.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

RESULTS OF POSTERIOR ROTATIONAL FEMUR OSTEOTOMY IN CHILDREN WITH POSTSEPTIC HIP DEFORMITY

Sakalouski Aleh
Republican Scientific and Practical Centre of Traumatology and Orthopaedics, Minsk, Belarus
E-mail: sakalouski@yandex.by

Keywords: children, postseptic hip deformity, posterior femoral rotational osteotomy.

Damage of a superior part, incongruity and multiplane deformity of the femoral head in children after hip septic arthritis is a serious problem. We use our own technique of intertrochanteric osteotomy with posterior 45–90° rotation of the proximal part of the femur (head and neck) in 19 cases in 18 children with postseptic hip deformity. The indications for surgery: damaged or 3-D deformities of the proximal part of the femur with significant destruction of a superior segment of the femoral head with articular surface incongruity.

The aims of operation: restoration of maximal sphericity of a loaded segment of the femoral head, normalization of the greater trochanter position, lengthening of the femoral neck.

The results were studied with the mean follow-up of 7 years 5 months (3 to 25 years). The mean value of the epiphyseal quotient increased from 48 to 98. Its improvement, as a rule, was marked and lasted till the moment of bone maturity. The epiphyseal-neck quotient increased to 99 against 58 before the intervention and the neck-shaft angle became 130 against 120°. In 16 cases the Wiberg angle increased from 18 to 30°, in 3 cases (when the Wiberg angle was less than 20°) rotational osteotomy was complemented by the operation on the pelvis. According to Severin system (modified by Ziots and Mac Ewen) the radiological results were as follows: 7 joints are referred to group I, 8 – to group II, 2 – to group III and 2 – to groups IV–V. The clinical results were assessed according to McKay's system, modified by Zionts: good and excellent results were registered in 15 cases (79%).

Posterior femoral rotational osteotomy cannot eliminate defects of the femoral head but allows maximal use of its intact segments. The operation gives the possibility of reorientation of the femoral head in three dimensions in case of multiplane deformity.

The merits of the intervention: absence of angle deformities and negative influence on the growth plate of the femoral head, lengthening of the femoral neck and limb.

ABSTRACT OF ORIGINAL PAPER

see Pohybové ústrojí, 22, 2012, No. 3–4, p. 33–59

SUBMICROSTRUCTURAL DOMAINS OF THE HUMAN FEMORAL COMPACT BONE

Petrtyl Miroslav[1)], Balik Karel[2)], Povysil Ctibor[3)], Zaloudkova Margit[2)]

[1)] Czech Technical University, FCE, Department of Mechanics, Laboratory of Biomechanics and Biomaterial Engineering, Prague, Czech Republic

[2)] Dept. of Composites and Carbon Materials, Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, Prague, Czech Republic

[3)] Institute of Pathology, 1st Faculty of Medicine, Charles University, Prague, Czech Republic

*Corresponding author: M. Petrtyl, Laboratory of Biomechanics and Biomaterial Engineering, Department of Mechanics, Faculty of Civil Engineering, Czech Technical University, Thakurova 7, 160 00 Prague 6, Czech Republic. Tel: +420224354479, E-mail: petrtyl@fsv.cvut.cz, petrtylmir@seznam.cz

Key words: cortical bone, secondary osteons, nanoshall, microfibers

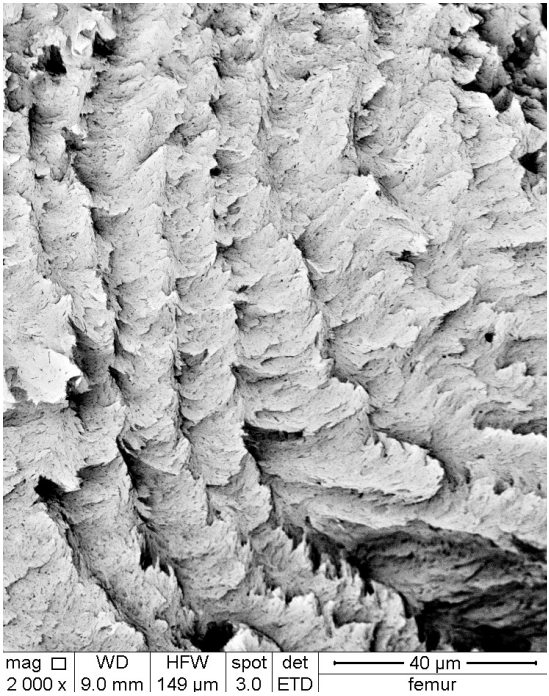
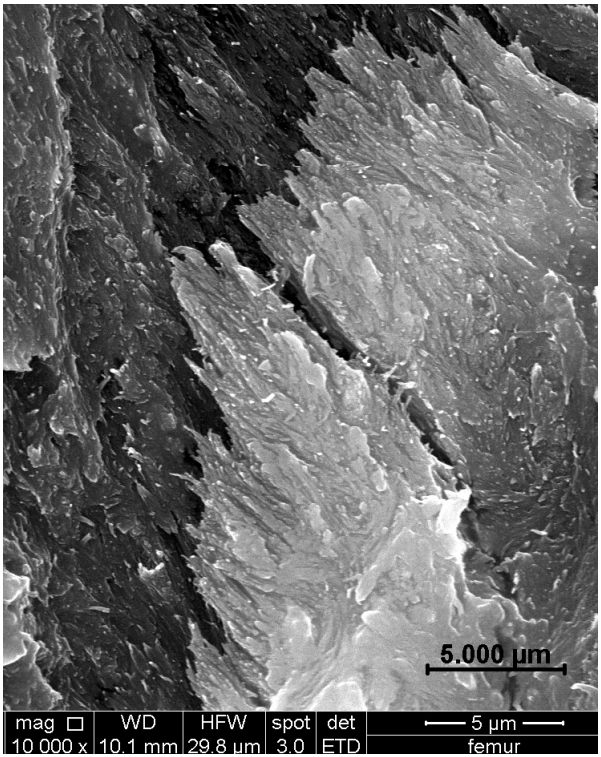


Figure 1 Systems of laminated and vertically arranged mineralized nanoshells. Each nanoshell (as a domain of the 3rd structural level) is a constitutive element of the 4th structural level, i.e. of a mineralized microfibre (microcolumn), magnification of 2000 x

The cortical bone is a highly dynamic connective tissue in which complex biomechano-chemical and bioelectrical (ionic) processes take place with the objective of maintaining the living bone tissue in a dynamic equilibrium. This bone is a hierarchically organised biocomposite tissue ranging from the nanoscopic to the macroscopic scale. The living bone tissue, like other biological systems, has the ability of optimizing these structures at all "its" structural levels, *optimizing their functions and their behaviour*. The dynamic equilibrium of ongoing metabolic processes is a necessary precondition for the function stability and formation (modelling/remodelling) of new bone tissue. Among significant regulators of metabolic processes, safeguarding the dynamic equilibrium of the whole complex bone tissue system, there are biomechanical effects (locomotor loading), the effects of

estrogen hormones, nutritive factors, etc. Dynamic loads predetermine the formation of new bone tissue and its long-term function stability. Bone tissue structures are adapted to dominant loading effects during bone tissue remodelling processes. They are also the place where new orientations of bearing components, which have been *the subject of histological observations* so far, arise. Therefore, great interest has been focused on identifying the orientations of basic structural units (*structural domains*) of bones at each of their structural levels

The presented results are interconnected with the new histological observation of human femoral cortical bone at the nanostructural/submicrostructural levels. The objective of this study is to verify and refine the descriptions of nanostructures and submicrostructures of the human diaphyseal compact bone (in selected localities of the human femoral diaphysis) with the scanning electron microscope. Two methods we were found to be effective to determine the structural domains. First, select the appropriate part of osteonal fracture. Second, apply the Quanta 450 with the EDS-Apollo X detector for exact determination of histological substructures. As the domains of the 2nd structural level are mineralized nanofibrils, then dominant domains of the 3rd structural level are layered nanoshalls, creating the mineralized cylindrical columns, i.e. mineralized microfibres. Each mineralized nanoshell is composed of parallel oriented mineralized nanofibrils (nanorods) having roughly the same orientation in the same shell layer. The nano/substructural elements are formed (during the bone remodellation) under the influence of the dominant biomechanical features of torsional micromoments, microforces in tension and/or in compression.



At each level of the hierarchy of cortical bone structures, the basic structural units have a genetically predetermined position and primary orientation. During remodelling cycles, the orientation of numerous structural units undergoes changes. From a biomechanical perspective,

Figure 2: Bundles of mineralized nanofibrils (nanorods) 80-140 nm in diameter from the cleavage of an osteon part. In the top right part of the image, the parallelism of the longitudinal axis of nanofibrils and their lamination are clearly visible, magnification of 10 000 x

they depend on the magnitudes and directions of dominant principal stresses, or the directions of dominant principal deformations. With respect to some more or less varying descriptions of the structures of secondary osteons, considerable attention has been paid to histological descriptions of microstructures and nanostructures.

The following most important conclusions can be drawn: – the fundamental structural domain of the 3rd structural level is the *mineralized nanoshell*, (**Figure 1**) 80–140 nm in thickness. The nanoshell is composed of parallel mineralized fibrils (nanorods), (**Figure 2**). Nanoshells form laminated (mutually wrapping each other) cylindrical annular segments. In each nanoshell, the nanofibrils have roughly the same orientation. In adjacent layers, however, the orientations of nanofibrils tend to differ.

The mineralized microfibre (microcolumn) is the fundamental bearing domain of the 4th structural level. It is composed of the nanolayers of segments of cylindrical nanoshells (**Figure 1**). Radial and tangential shells increase not only the stability of mineralized microfibres, but also the bending and torsion spatial rigidity of each osteon. The systems of lamellar column walls may transfer combined loads, i.e. combinations of the effects of torsion moments, bending moments and compressive/tensile normal forces. Torsion moments contribute to the formation of helical structures in the femoral cortical bone.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

HARDWARE-SOFTWARE METHOD FOR POSTURAL ABNORMALITIES AND SPINE DEFORMITIES DIAGNOSIS BASED ON DIGITAL PHOTO ANALYSIS

Arsenev Aleksey Valentinovich[1)], Baloshin Yuriy Aleksandrovich[3)], Vasilevich Sergey Viktorovich[3)],
Dudin Mikhail Georgiyevich[1)], Kipke M.V.[2)], Sorokin A.A.[2)], Sukhov T.M.[2)], Sukhova M.A.[3)]
[1)] SFHI Children's Rehabilitation Centre of Orthopaedics and Traumatology "Ogonek",
[2)] FSBEI HE Baltic State Technical University "Voenmeh" Named after D.F. Ustinov
[3)] LLC "Smart-Orto", St. Petersburg, Russi
E-mail: stivamat@rambler.ru

Abstract

The early diagnosis of postural abnormalities of children is considered the basis for its successful alignment. Another important point to be provided within the treatment is precise control of disease state for patients with more serious spine deformities. Classic orthopaedic methods of radiodiagnosis are informative and have important diagnostic value, but their usage is restricted on medical grounds.

Also, the popular methods of medical imaging based on photographic and video work, such as "KOMOT" (Russia), «Optronic Torsograph» (Japan), «Quantec» (England), «DIERS for metric 4D»

(Germany) and others require expensive equipment and special environment in order to conduct an examination (**3, 4, 5**). Thus, the above mentioned methods are not designed for wide use. Besides, such kind of medical imaging of diagnostic findings is a serious practical issue for an orthopaedist.

Key Words: scoliosis, kyphosis, diagnostics, digital photo, specialized medical software

Introduction

Nowadays, the state-of-the-art mobile devices, i.e. smartphones, tablets, action cameras, and other portable dashboard cameras, are equipped with high-quality high-resolution lenses. A digital image captured with such a device supports a multifocal analysis (**1**) and object measurement (**2**). The validity and accuracy of indicators critically depend on the specialized software being used. There is a number of software solutions generally used to improve the image quality and measurements of relative object sizes. The following software solutions can be considered good examples: iPhotoMeasure (**7**), MB-Ruler (**9**), and Marker Meter (**8**). Nevertheless, these apps do not lack some shortcomings which impose some constraints on their use in medicine. Generally, these software solutions are designed to measure nonliving things.

We have developed a test version of software which uses a digital photo to conduct analysis of human body surface with the basic anthropometric measurements. The photograph can be taken using consumer electronics ("handy" approach). Such kind of an analysis and the diagnosis which is based on this analysis are harmless, informative and allow to complete physical examination with objective imaging.

Material and methods

We took photographs of a patient in sagittal and frontal planes. Additionally, there were serial shots accompanied by functional tests. The examination was conducted in room light conditions (average vertical illumination was 300–500 lx) using an Android tablet with an 8 MP camera and screen size of 9.7".

The camera was aligned in respect to the patient body using the built-in accelerometer which allowed to reduce geometric distortions in photographic work.

The test software was developed based on a universal cross-platform environment. The software universalization was implemented using the technologies which allow to use the software on different hardware platforms: Android, iOS, Windows, Linux.

Using a set of unified classes a cross-platform technology Qt [10] (version 5.5) in use allows to cover almost any hardware platform. The software was developed using the C++ Programming Language (**6**).

Results

A test software was developed, which uses special algorithms allowing to conduct patient examination in different planes. For example, the frontal plane gives an opportunity to detect soma and limbs asymmetry, assess the level of anatomic landmarks. Also, the lateral deviance of spine can also be detected in this plane. The similar procedure can be used for sagittal profile of patient's soma. The examination results are given in relative and absolute units.

Also, the software allows to structure, save data and assesses the dynamics of clinical signs of deformities based on different criteria.

It has two variants of functional capabilities: simple for a patient and more professional for a doctor. A patient can take photos, locate the key points, preview parameters and report to his or her doctor. When used by a doctor it has the following capabilities: detailed profile assessment, verification of reference points, disease state tracking, formation of preliminary medical notes.

It is also worth mentioning that the software allows to take measurements in both absolute and relative units. This is due to the calibration which is implemented using a prototype object with precise (formalized) dimensions. The connection of real objects and their photographic copies is defined by a software algorithm. The examination has a margin of errors of ±1 mm for length and ±1 degree for angular measurements. In case the calibration is impossible parameters shall be assessed in relative units.

The photo-based method of measuring the parameters of a locomotion system combines our practical experience and formalised methods tied to reference point distribution marked on the photos of frontal and sagittal patient profiles. The digital image of a patient's body can be divided into smaller segments with the possibility to perform more detailed measurements, e.g. only within the human soma or a certain limb.

An integral part of the software is the capability of database formation. This database contains photos with reference point coordinates, angular measurements, area and segment lengths. Additionally, it gives an opportunity to include descriptions of results in text form. Thus, the software allows to describe and document both the current state of a patient's locomotive system and changes in dynamics.

In the long term this software for patients' profile assessment shall become more automated and simple.

Discussion

The state-of-the-art electronics technologies and software solutions for taking and processing of photographs allowed to create a method for express-testing which can be widely used. It shall

allow to assess the visual state of parameters of orthopaedic status for almost any patient. It can be especially useful in regions with the lack of specialists.

The integration of this diagnostic method will allow to detect patients with postural abnormalities and spine deformities on early stages. The diagnosis based on "handy" approach is available. The repeated use of this method for one and the same patient allows to receive additional information on deformity state dynamics. Although the system is absolutely harmless it is of big social importance and financial efficiency.

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ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

ORTHOPAEDIC ANTHROPOLOGY: WHY WE WALK ON TWO LEGS OR WHY WE USE BIPEDAL LOCOMOTION

Zemková Daniela[1), 2)], Hudáková Olga[2)]

1) Dept. of Paediatrics; University Hospital Motol; Prague; Czech Republic

2) Ambulant Centre for Defects of Locomotor Apparatus; Prague; Czech Republic

E-mail: dezem@email.cz

Keywords: upright posture, bipedalism, „ills" of uprightness

Bipedalism is one of the hallmarks of hominid evolution. Homininae (our ancestors and their relatives) walk upright more than 4 million years. Nevertheless, as prof. V. Tobias pointed out, we have not yet evolved a fault-free mechanisms. Many pathological conditions we have discussed during this symposium are consequences of bipedal locomotion (flat feet, slipped discs, scoliosis, DDH, spondylarthosis, arthrosis of the load-bearing joints, knee deformities etc). Why did natural selection tolerate this evolution? Upright posture and bipedalism long preceded the marked and allometric enlargement of the brain and the emergence of tool-making. The footprints from Laetoli are 3.5 million years old. They belong to Australopithecus afarensis (Johanson et al. 1982) whose postcranial skeleton gives evidence of bipedalism, but the cranial capacity resembled that of chimpanzee. However, his adaptation to bipedalism was incomplete; further structural adjustments occurred during following evolution. Locomotion of Homo erectus (about 1 million years before present – BP) was indistinguishable from that of modern man. In this contribution we focus our attention to the very beginning of bipedalism. Forty years ago it was believed that the ape-human divergence occurred about 14 million years ago. However, molecular genetics dramatically changed our view. The splitting between ape and hominine lineage took place later, between 5 and 7 millions years BP. Therefore paleoanthropologists are specially interested in excavation sites dated 5–7 mil years BP. New discoveries from the beginning of third millennium brought more questions than answers.

First international team headed by Tim White from University of California, Berkeley works in Ethiopia. Their findings cover the period between 4 and 6 mill. years BP. Their most important discovery was named Ardipithecus ramidus. Pelvis and femur give evidence for bipedalism but he had long upper extremities and grasping hallux which is indicative of climbing (T. White et al. 2001).

Another team works in Kenya. Martin Pickford (originally British geologist now Collège de France, Paris) in collaboration with Brigitte Senut and Kiptalam Cheboi discovered skeletal fragments of the creature 6 million years old named Orrorin tugenensis. The most important finding are two well-preserved femora showing evidence of bipedal locomotion (B. Senut et al 2001).

The third team – Mission paleoanthropologique Franco-tchadienne – is led by Michel Brunet. Excavation took place in Djurab Desert of Northern Chad. In 2001 they had unearthed the earliest hominid ever found – 7 million years. They named their discovery *Sahelanthropus tchadensis*.The finding included a nearly complete, yet distorted, skull (nicknamed Toumaï, meaning "hope of life" in the local Goran language). The position of foramen magnum indicates upright posture (M. Brunet et al 2002). Today, many anthropologists agree that the seven-million-year-old *Sahelanthropus* was an early hominid while others suggest it was nothing more than an ancient ape. This finding is very near to the assumed chimpanzee – human divergence. How to explain this controversy?

There are several possibilities:

1. Sahelanthropus was not biped, the reconstruction is not correct
2. The chimpanzee – humane divergence took place earlier.
3. The evolution of bipedalism was very rapid

4. Bipedalism evolved in Hominoids several times during miocene and Sahelanthropus and Orrorin can be descendants of older radiation of biped hominoids.
5. Chimpanzees and gorillas are descendants of biped common ancestors and their quadrupedal locomotion with knuckle walking is secondary.

Now it is not possible to decide which scenario approximates the real process. However, it is well-known that tendency to upright posture by climbing is typical for most primates. Prof. Tobias stressed especially the upright sitting. It was probably preadaptation for bipedalism. Most scientist agree with new view on the environment where our locomotion evolved. Probably it was not dry savanna but environment resembling Okavango delta. Our ancestors were able to walk in swampy or open terrain for short distances and this type of locomotion supplemented the traditional climbing. The unfavourable consequences of bipedal locomotion apparently manifested later in post-reproduction age and so they did not influence the reproductive success of our ancestors.

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Dedication

Authors dedicate their memory to Professor Philip Valentine Tobias, MD (14.10.1925 -7.6.2012), famous anatomist and paleoanthropologist and a participant of the Prague-Sydney symposium in Prague and Humpolec (in the frame of Hrdlička´s congress) in 2002.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

PROBLEMS OF PAIN OF LOCOMOTOR SYSTEM IN THE OBESE

Parizkova Jana
Obesity Management Centre, Institute of Endocrinology, Prague, Czech Republic
E-mail: jparizkova@endo.cz

Key words: obesity – locomotor system – pain – growth – physical fitness

Excess load on the musculoskeletal system by an increased adipose tissue has significant consequences, especially when overweight and obesity starts to develop during growth period; this can be manifest even under conditions of a monitored diet, but along with reduced energy output. This has been found recently in most countries of the world in an increasing number of children, including youngest age categories (preschool, school children, adolescents). Skeletal dimensions (e.g. of the breadth of the pelvis in adolescent males etc.), bone density and structure are significantly influenced . The character and degree of these changes are related to the degree and duration of overweight and obesity, which are mostly accompanied by hypokinesia and kinesiophobia, reduced level of functional capacity (especially of the cardiorespiratory system), and worsened physical fitness and motor abilities. Inadequate dietary intake, physical activity régimes and eventual fluctuation of adiposity due to interventions also interfere significantly with mentioned undesirable changes of locomotor system development, which includes not only bones and muscles, but also joint, fascia, and other tissues. Important resulting complication of this status are pains; vertebral column, and especially knee and hip joints are most often tackled. Especially back pain reduces markedly physical activity; painful tibia vara and tibia valga, hip joints, as well as pedes plani which interfere with normal movement stereotypes reduce further the participation in exercise. Pain which can be very intense limit also using adequate exercise, without low calorie diet, as a treatment and most acceptable physiological approach for weight reduction during growth. Along with weight loss and the rectification of musculoskeletal status, elimination and/or limitation of pain is also included, enabling healthier active lifestyle without pharmacological and/or surgical interventions of digestive system (e.g. gastric binding etc.), used at present more often already during growth.

ABSTRACT OF PERSPECTIVE ORIGINAL PAPER

PROBLEM OF THE FEET. FLEXION TEST IN DIAGNOSIS OF "THE SENSIBLE AND PAINFUL FOOT". PHYSIOTHERAPY. PROPHYLAXIS

Karski Tomasz[1)], Karski Jacek[2)], Karski Janusz[3)], Kulka Małgorzata[4)]

[1)] Vincent Pol University in Lublin, Poland

[2)] Paediatric Orthopaedic and Rehabilitation Department of Medical University in Lublin

[3)] Children Sanatorium in Krasnobród / Orthopaedic Rehabilitation Ward

[4)] Neurology Department of Medical University in Lublin

E-mail: t.karski@neostrada.pl jkarski@vp.pl info@zacisze.zwierzyniec.com

Introduction

In program of research in Orthopaedic Department of Medical University in Lublin from the grounding time (7.12.1954) the feet problems were on the first plan. The grounder of the Department Prof. Stanislaw Piątkowski had to pay big attention to deformation of feet and their treatment – deformities in children and" sensible and painful feet in adults".

Material

In the years 1961 (beginning of orthopaedic activity of T. Karski) the clinical team of the Department had to examine thousands of children and adults with feet problems and wrote many articles in research connected to these problems. In 1970 T. Karski found the test to examine the insufficiency of forefoot. This test is calling "the flexions test of toes".

Technique of examination and clinical feathers

Small children and older children had the flexion of toes 90–60 degree. The young – boys and girls especially had a smaller flexion of toes – only 40–30 degree. Adults had flexion of toes 20–10 or even 0 degree. The person with serious insufficiency of forefoot had the hyperextension contracture of toes and sometimes with dorsal dislocation of second toes. In "Friedreich Syndrome" the hyperextension contracture of toes is especially big and start to from during childhood. Such feet are mostly deformed in form of "pes arcuatus seu excavatus". The people with pathological "flexions test" suffer because of pain in plantar side of foot. The dorsal part of forefoot is swollen and painful. Such people are unable to walk easily.

Physiotherapy

The patients with sensible and painful feet need the permanent kinesiotherapy to restore the plantar flexion of the toes. The exercises should be done in warm water, after using paraffin, after using fango. The exercises should be done by physiotherapist or an educated member of family. Active toes flexions can also be done by patients. After many sessions of such therapy pain disappears and patients can walk longer without pain.

Discussion and conclusions

In feet problems not only the anatomy but also function is important. In case of a forefoot, plantar flexion of toes is especially important, because this movement is crucial for walking. Doctors should remember this function of toes and remember to use in diagnosis "the flexion test of toes".

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"HISTORY OF SANATORIUM, UNDER THE NAME OF DR JANUSZ KORCZAK, IN KRASNOBRÓD"

Karski Tomasz, Karski Janusz, Żurakowski Wojciech
Children Sanatorium in Krasnobród / Orthopaedic Rehabilitation Ward
E-mail: t.karski@neostrada.pl

The town is located near to the Roztocze National Park, in the a picturesque valley of the Wieprz river. In the Podklasztor district, there is a baroque church founded in the 17th century by Marysieńka Sobieska, the wife of King Jan III Sobieski, the winner of the Vienna battle on the in September 12th, 1683.

The Rehabilitation Department of Orthopaedic and Rehabilitation Clinic in Krasnobród was **created in 1977** based on the Paediatric Department. In this purpose Prof. I. Wośko, Rector Prof. B. Semczuk cooperated with the government local council of the Zamość city. The Department included had 30 places. Dr Tomasz Karski, future Professor and Chief of Lublin Orthopaedic and Rehabilitation Paediatric Clinic (1995–2009), was appointed as the consultant of this Department.

The Chief Director of the Sanatorium. Chief Gustaw Sak was the first Creator / Coordinator of the Rehabilitation Department. Already in 1977, physiotherapy, balneotherapy and kinesiotherapy were developed. In the early 80's the Sanatorium received as a gift, from the Czechoslovakia Embassy, a Hubbard tank, and a sauna cubicle from a Polish sponsor.

The Difficult period in 1981–1982. The moment of introduction of martial law in Poland was hard for the Sanatorium. The government tried to transform in this venue into a nursing home, or to a place for psychiatric patients. Due to the immediate action performed by the our Clinic this unfavorable transformation was avoided.

Political transformations of 1989–1990 were also a hard time for the Rehabilitation Department in Krasnobród. Chief Director Gustaw Sak was dismissed and the Rehabilitation Department was liquidated. During one year, all orthopaedic consultations were charitable.

In the following years of 1995–2000, the Sanatorium was governed by Chief Director Wiesław Chmielowiec and Dr Paszkowska.

Further development took place in the 90' – thanks to the great lead-ship of Mr. Chmielowiec. A new rehabilitation building was constructed for outpatients and adult patients. Nowadays, the Sanatorium accommodates 350–500 children yearly with locomotor system dysfunctions.

Scientific Meetings of Lublin Orthopaedic Society were organized in Krasnobród. The Sanatorium was visited by Prof. M. Garlicki, Prof. S. Piątkowski, Prof. S. Malawski, Prof. J. Kozak, Prof. A. Kiepurska, as well as foreign physicians such as, Prof. K. Solonen from Helsinki, Prof. Pauli Raunio from Heinola, Prof. Jurgen Franke and Dr Steinerstauch from Erfurt, Prof. Herald Thom and Dr

Manolikakis from Rummelsberg, Prof. Lanart and Dr Szell from Budapest, Prof. J. Arlet from Toulouse and Dr Kułakowska-Wajs from Brussels.

26th June 2006 – A department for adults was created.

Artistic and Historic Events. In 2007 an exhibition titled 'Korczak and His Creation' was held. On the September 14th, 2008 a tablet commemorating Maria and Kazimierz Fudakowski – the last owners of the land, where the Sanatorium was built, was founded.

Investments. A connecting passage between the buildings was constructed in 2009, and new medical and rehabilitation gear equipment was purchased.

Publications. In December 2010 a brochure titled 'To Roztocze for Health' was published in 10,000 copies in total.

In December 2010 the Chief Director of the Sanatorium in years 1995–2010, Wiesław Chmielowiec, was appointed as the mayor of Krasnobród. October 1st 2010 Dr Janusz Karski became the deputy for the Independent Public Therapeutic Rehabilitation Sanatorium of Dr. Janusz Korczak in Krasnobród.

On the March 11th 2011 the Physiotherapeutic Sanatorium Department was created and Mr. Wojciech Żurakowski was appointed on April 14th 2011 as the temporary Chief Director of the Sanatorium.

In 2012 the park and palace complex was renovated and small architectonic elements were added. The investment was funded by the EU.

On the February 15th, 2013 Mr. Wojciech Żurakowski was appointed for longer time as the Chief Director of the Dr Janusz Korczak Independent Public Rehabilitation Sanatorium in Krasnobród.

On April 24th 2013 the name of the Sanatorium was changed into to "Janusz Korczak Independent Public Rehabilitation Sanatorium in Krasnobród". In 2016 the main hall and installations in the annex were reconstructed.

On September 24th 2016 the Sanatorium was visited by Participants from the 18th Prague-Lublin-Sydney-St. Petersburg Symposium.

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RNDr. DANIELA ZEMKOVÁ, CSc. – ŠEDESÁT PĚT LET

21. května 2016 oslavila v kruhu své rozrůstající se rodiny šedesáté páté výročí narození paní RNDr. Daniela Zemková, CSc. Svou celoživotní prací se zařadila k našim významným klinickým antropologům. Specializovala se na auxologii u chronicky nemocných dětí a dětí se skeletálními vadami.

Profesní **životopisné údaje** uvádíme pouze heslovitě. Pražská rodačka z Karlína vychodila základní a střední školu v Praze, aby se věnovala studiu odborné biologie, specializace antropologie na Přírodovědecké fakultě UK v Praze (1969-1974). Studium ukončila diplomovou prací s názvem

„Některé antropologické údaje pražských matek, dětí a otců"a státní zkouškou z biologie v roce 1974. V letech 1974-1975 byla na studijním pobytu na katedře antropologie PřF UK v Praze.

V roce 1976 s úspěchem obhájila rigorózní práci „Pánevní dno, jeho vývoj a změny za těhotenství". V letech 1978–1987 měla studijní pobyt jako odborný pracovník v oddělení evoluční biologie MBÚ ČSAV a v Laboratoři evoluční biologie ČSAV.

V roce 1987 nastoupila jako klinický antropolog – odborný pracovník nelékař na II. dětské klinice (později Pediatrická klinika) Fakultní nemocnice v Motole a působí zde až dosud. V tomto zaměstnání našla své životní poslání.

V roce 1992 složila atestaci z klinické antropologie a funkčních metod.

V letech 1990–95 spolupracovala s Ústavem sportovní medicíny a katedrou antropologie PřF UK v Praze při antropometrickém výzkumu dětí a mládeže jako konzultantka antropometrické části celostátního výzkumu dětí a mládeže.

Od roku 1991 až dodnes spolupracuje na grantech a výzkumných záměrech řešených týmy Fakultní nemocnice v Motole a 2. LF UK v Praze.

Od roku 1996 spolupracuje s Ambulantním centrem pro vady pohybového aparátu v Praze jak při diagnostice dětí s vrozenými vadami končetin, páteře, kostními dysplaziemi a genetickými syndromy, tak při indikacích k operačnímu či ortotickému léčení a hodnocení výsledků komplexní léčby.

V roce 2001 se stala kandidátem lékařských věd, téma disertační práce „Antropometrie a její význam při sledování chronicky nemocných dětí - na modelu cystické fibrózy."

V roce 2006 získala Osvědčení k výkonu zdravotnického povolání bez odborného dohledu

Její v**ědecká činnost** je velice rozsáhlá a souvisí s jejím profesním zapojením ve FN v Motole. Jako klinická antropoložka pracuje v týmu endokrinologického oddělení pediatrické kliniky, kde se zabývá zvláště auxologickou problematikou dětí s poruchami žláz s vnitřní sekrecí (předčasná puberta, opožděná puberta, deficit růstového hormonu aj.) a chronicky nemocných dětí (cystická fibróza, autoimunitní onemocnění). Trvale spolupracuje s Ústavem biologie a lékařské genetiky. Zvláštní pozornost věnuje problematice růstu skeletu u kostních dysplazií a dysostóz, která je komplexně řešená v Ambulantním centru pro vady pohybového aparátu s.r.o. Jejím trvalým zájmem jsou vztahy genotypu a fenotypu a v posledních letech otázky vývoje a evoluce pohybového aparátu.

Pedagogické aktivity. Od roku 2001 působí jako externí učitel katedry antropologie a genetiky člověka PřF UK (předmět Klinická antropologie a podílí se i na výuce předmětu Biomechanika a patobiomechanika pohybového aparátu). Byla a je trpělivým školitelem mnoha studentů diplo-

mových a bakalářských prací, ale i kritickým oponentem vysokého počtu vědeckých studentských prací. V rámci endokrinologického týmu se účastní postgraduálního vzdělávání lékařů a sester.

Přednášky a publikace. Publikovala se spoluautory více než 100 odborných prací doma i v zahraničí. Je spoluautorkou 7 knih nebo kapitol v knihách vydaných u nás. Významná jsou její spoluautorství v pracích uveřejněných v zahraničních impaktovaných časopisech (16 publikací), kde její auxologické hodnocení souborů pacientů je nezastupitelné.

Členství. Je členem Antropologické společnosti, Pediatrické společnosti ČLS JEP z.s., Endokrinologické společnosti ČLS JEP z.s., Společnosti pro Biomechaniku a členem výboru Společnosti pro pojivové tkáně ČLS JEP z.s.

Pracuje v redakční radě časopisu Pohybové ústrojí – pokroky ve výzkumu, diagnostice a terapii.

Pani RNDr. Danielu Zemkovou, CSc. jsem poznal ihned při začátku její kariéry ve FN v Motole v roce 1987, kdy se s nadšením zapojila do komplexní diagnostiky a léčení dětí s končetinovými, systémovými a kombinovanými vadami skeletu léčenými na dětské ortopedické klinice. Antropologické vyšetření a antropometrické metody se ukázaly pro diagnostiku, indikace k léčení a pro monitorování výsledků jako nezastupitelné. Ocenil jsem její morální kvality při založení a snaze udržet Nadaci pro děti s vadami pohybové ústrojí (Maříkova nadace), která usilovala o realizaci svého programu, a to vybudovat specializované pracoviště, poskytující komplexní péči „pod jednou střechou" pro děti a dospělé s vadami pohybové aparátu v bývalém plicním sanatoriu v Kostelci nad Č.l. (který byl opuštěn sovětskými vojsky v roce 1991). Stali jsme se blízkými přáteli, které spojuje snaha pomoci dětem s tělesným handicapem. Společně jsme přichystali mnoho odborných přednášek, které v posledních letech prezentujeme především na symposiích organizovaných Společností pro pojivé tkáně ČLS JEP z.s. a Ortopedicko-protetickou společností ČLS JEP z.s. Četné publikace v našem a zahraničním písemnictví jsou dokladem naší společné mnohaleté spolupráce.

Vážím si jejího zdravého úsudku v pohledu na prognózu pacienta, upřímného jednání a výjimečné schopnosti prezentovat studentům i kolegům současné velmi složité vědecké poznatky z biologie a genetiky srozumitelným způsobem. Po mnoho let je pro mě a ostatní kolegy týmu Ambulantního centra pro vady pohybového aparátu s.r.o. v Praze oporou v klinické, pedagogické a vědecké práci.

Paní Dr. Zemková je velmi odpovědná a spolehlivá, jedná vždy s upřímností a citem pro přátelství, je laskavá a přímá k pacientům a jejich rodičům, kterým se vždy snaží dát naději při nejisté prognóze jejich růstu a možnostech řešení vrozených vad. Dokáže být nadšená pro nové tvůrčí nápady, je vstřícná originálním vědeckým poznatkům, ale vždy stojí nohama na zemi, je kritická k sobě a ostatním.

Vzhledem k významu některých publikací paní Dr. Zemkové odkazuji na seznam vybraných publikací, který byl uveřejněn při příležitosti jejího 60. životního jubilea v časopisu Pohybové ústrojí

– pokroky ve výzkumu, diagnostice a terapii v roce 2011, ročník 18, č. 304, s. 268–273 (www.pojivo.cz/pohybové ústrojí) a kdy byla oceněna Medailí za zásluhy o rozvoj oboru a vědy SPT ČLS JEP.

Za posledních 5 let se stala spoluautorkou úctyhodného počtu významný prací, z nichž většina byla uveřejněna v časopisech s IF – viz Kuklová P, Zemková D, Kyncl M, Pýcha K, Straňák Z, Melichar J, Šnajdauf J, Rygl M. Large diaphragmatic defekt: are skeletal deformities preventable?

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Milá Dano, k Tvému významnému životnímu jubileu Ti přeji osobně, jménem výboru Společnosti pro pojivé tkáně ČLS JEP z.s. a jménem členů redakční rady časopisu Pohybové ústrojí pevné zdraví, radost a spokojenost v kruhu Tvé početné rodiny a věřím v další naši všestrannou spolupráci ku prospěchu našich pacientů.

Dovol, abych Ti jako ocenění Tvé systematické nezastupitelné odborné činnosti předal Diplom čestného členství ve Společnosti pro pojivové tkáně ČLS JEP z.s., který si plně zasloužíš.

prof. MUDr. Ivo Mařík, CSc.
předseda SPT ČLS JEP z.s.

Profesor MUDr. Ivo Mařík, CSc. a doc. MUDr. Václav Smrčka CSc.

Doc. MUDr. VÁCLAV SMRČKA, CSc. – ŠEDESÁT PĚT LET

V listopadu letošního roku oslaví šedesáté páté narozeniny doc. MUDr. Václav Smrčka, CSc. Sedlčanský rodák Václav Smrčka maturoval na gymnasiu v Sedlčanech, vystudoval 1. LF UK v Praze. Od roku 1976 pracoval na chirurgickém oddělení OÚNZ v Příbrami. Atestaci z chirurgie I. stupně složil v roce 1980. V témže roce byl na základě konkurzního řízení přijat na Kliniku plastické chirurgie v Brně. Vědecky pracoval a je stále činný v několika směrech.

Od roku 1985 je členem světové paleopatologické asociace (PPA) se sídlem v současné době v Durmanu, Spojené království (předsedkyně Charlotte Roberts), pravidelně se aktivně zúčastňuje evropských kongresů této společnosti.

S rehabilitačními pracovníky Kliniky plastické chirurgie v Brně vypracoval konzervativní metody v léčbě poranění ruky. Po 7 letech tato práce byla oceněna cenou rehabilitační společnosti za rok 1988.

V roce 1990 obhájil s doc. MUDr. J. Samohýlem, CSc. výzkum „Kontraktury ruky".

V letech 1989–90 stážoval 7 měsíců ve Francouzském institutu chirurgie ruky v Paříži a současně studoval paleopatologii (choroby starých lidských populací na kostním materiálu a mumiích) na Sorbonně pod vedením prof. Pierre L. Thillauda.

V roce 1992 obhájil aspirantskou disertační práci a získal titul kandidáta věd.

V letech 1993–1998 zastával funkci prezidenta České a Slovenské společnosti chirurgie ruky.

V roce 1992 organizoval sympozium chirurgie ruky v Harrachově společně s doc. MUDr. K. Dlabalem s kterým byl roku 1994 pozván na výroční konferenci Americké společnosti chirurgie ruky do Phoenixu a Mayo Clinic v Scottsdale. Současně se vzdělával v estetické chirurgii na Plastickém oddělení university v San Diegu, soukromé klinice Dr. Wooda v Los Angeles a svalové rekonstrukci na Univerzitním pracovišti plastické chirurgie v Torontu u prof. Maktelowa.

V roce 1995 vedl další sympozium chirurgie ruky v Hradci nad Moravicí spolu s prim. MUDr. Česaným.

V roce 1999 s prof. I. Tattersallem vedl symposium **"European Dietary Trends from Past to Present"** v rámci Hrdličkova kongresu.

V roce 2001 habilitoval na 1. LF UK v Praze. V současné době je členem Ústavu dějin lékařství a cizích jazyků 1. Lékařské fakulty UK, kde vyučuje paleopatologii v českém i anglickém znění a dějiny lékařství. Na 1.LF UK vyučuje také speciální plastickou chirurgii a chirurgii ruky v seminářích a postgraduálních kurzech.

Doc. Smrčka je autorem více než 50 vědeckých publikací a spoluautorem 5 monografií (např. Flexory ruky, Extensory ruky). V zahraničí je uznávaná jeho kniha **„Trace Elements in Bone Tissue"** vydaná v roce 2005 v nakladatelství Karolinum. Ta zahrnuje dvacetiletý výzkum stopových prvků v kostní tkáni a rekonstrukce stravy z kostí za 7000 let ve Střední Evropě.

Společně s RNDr. V. Kuželkou a Prof. MUDr. C. Povýšilem, DrSc v nakladatelství Academia vydali knihu **„Atlas chorob na kostních preparátech"**(Atlas of Diseases in Dry Bones). Za tuto publikaci obdrželi Hlávkovu cenu za rok 2009 a cenu Komise pro lékařské obory rektorátu UK pro rok 2011.

V roce 2015 nakladatelství Karolinum vydalo jeho knihu „Válečný chirurg, František Burian a zrození české plastické chirurgie." Se spoluautorkou Mgr. Vlastou Mádlovou obdržel zvláštní prémii ceny Miroslava Ivanova.

Na jaře roku 2016 úspěšně obstál při jmenovacím řízení na vědecké radě 1. LF UK v Praze a před VR RUK v Praze.

Kolegu a přítele Václava Smrčku jsem poznal v roce1983 během stáže na Klinice plastické chirurgie v Brně, kam mě pozval pan doc. MUDr. J. Samohýl, zabývající se mimo jiné revmatickou rukou a výzkumem pojiva. Vašek byl velmi šikovný a trpělivý operatér. Mimo plastiku a operativu rukou byl již tehdy zapálený pro paleopatologii, v které se zdokonaloval za podpory antropologa pana Prof. Dr. Jelínka (Anthropos Brno). I ve mně vzbudil nadšení pro diagnostiku vrozených vad končetinových a systémových na archeologickém kosterním materiálu. V roce 1995 rodinné důvody ovlivnily jeho rozhodnutí přestěhovat se s rodinou zpět do Sedlčan. V tomto roce se zapojil jako plastický chirurg se zaměřením na chirurgii ruky do týmu Ambulantního centra pro vady pohybového aparátu v Praze 3 v Olšanské 7. Společně jsme rozvinuli plánované ambulantní operace ruky a nohy, hlavně u vrozených vad. Osvědčená spolupráce plastického chirurga a ortopeda dovoluje provádět formou tzv. jednodenní chirurgie i rozsáhlé rekonstrukční výkony.

Doc. Smrčka se stal členem redakční rady časopisu Pohybové ústrojí, členem výboru Společnosti pro pojivové tkáně ČLS JEP a dodnes se pravidelně zúčastňuje odborných akcí této Společnosti. Při příležitosti 60. životního jubilea v roce 2011 byl oceněn Medaili za zásluhy o rozvoj oboru a vědy Společnosti pro pojivé tkáně ČLS JEP. Společně jsme vytvořili několik úspěšných přednášek a publikací, z kterých si cením především práce: SMRCKA V, MARIK I, SVENSSONOVA M, LIKOVSKY J. *Legg-Calvé-Perthes Disease in Czech Archaeological Material.* Clin Orthop Rel Res, 467, 2009, 1, p. 293–297.

Kolega Smrčka se s nadšením věnuje i psaní beletristických příběhů a osudů známých i méně známých osobností, s kterými se měl příležitost setkat. Je autorem knih *Století neklidu, Trnitá cesta řezníka Toníka, Lotr po levici, lotr po pravici a spoluautorem Na staré řece, Česko-italské antologie Dům u moře, i humorných povídkových sborníků Posvícení 3, Posvícení 6 – Lehkonohé příběhy a Posvícení 7 – Tučnější sousta.*

Doc. MUDr. Václav Smrčka, CSc. je mezi svými přáteli a spolupracovníky znám jako spolehlivý člověk, velmi pečlivý operatér, který je vždy ochoten poradit a pomoci svým pacientům, kolegům i žákům.

Umí racionálně a s neobyčejným nadšením řešit vědecké a odborné problémy. Po odchodu své milované ženy Jany dokázal úspěšně uvést do života své dva syny Václava, Zdeňka a dceru Alenu, kteří mu jsou oporou a motivací pro jeho všestrannou profesionální a vědeckou činnost.

Milý Vašku, jménem výboru Společnosti pro pojivové tkáně ČLS JEP a jménem redakční rady recenzovaného časopisu Pohybové ústrojí Ti srdečně přejeme do dalších let pevné zdraví, životní elán, mnoho radosti uprostřed Tvé rodiny a další originální vědecké objevy při řešení výzkumných projektů. Je naší milou povinností předat Ti Diplom čestného členství ve Společnosti pro pojivé tkáně ČLS JEP z.s.

prof. MUDr. Ivo Mařík, CSc.
vedoucí redaktor časopisu,

MUDr. Miloslav Kuklík, CSc.
vědecký sekretář časopisu

prof. MUDr. et PhDr. Eugen Strouhal, DrSc.
čestný člen Společnosti pro pojivové tkáně ČLS JEP z.s.

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zajišťuje:
- Lékařské vyšetření pacienta a předpis pomůcky
- Zhotovení všech individuálních ortopedických pomůcek (protézy HK a DK, končetinové a trupové ortézy, měkké bandáže, ortopedickou obuv, ortopedické vložky apod.

provozní doba:
po 7.30–17.00; **út–čt** 7.30–16.00; **pá** 7.30–15.00

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e-mail: ortopedickaprotetika.praha@seznam.cz, **www.protetikapraha.cz**
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