Thoracic Spine – A Neglected Portion of the Spine Symposium
Zagreb, October 6, 2009

Thoracic spine is the largest part of the spine with anatomical and functional specificities that manifest on presentation and tailor therapeutic approach to the diseases and conditions involved. In the field of vertebrology, the professional and research efforts are mostly focused on the cervical and lumbar portions of the spine. Therefore, the Croatian Society of Vertebrology in collaboration with University Department of Rheumatology, Physical Medicine and Rehabilitation, and University Department of Neurosurgery, Sestre milosrdnice University Hospital, organized a symposium entitled Thoracic Spine – A Neglected Portion of the Spine, held on October 6, 2009 in Sestre milosrdnice University Hospital Multimedia Hall. The aim of the Symposium was to present current concepts on the causes, diagnosis, differential diagnosis, management and rehabilitation of patients with various diseases and conditions involving the region of thoracic spine, with due consideration of the evidence-based medicine data. With this Symposium, the Croatian Society of Vertebrology celebrated the World Day of the Spine, within the many activities related to the 2000-2010 Decade of Bones and Joints, proclaimed by the World Health Organization.

Twenty two experts in the field of vertebrology took active part in the Symposium that was led by Professor Simeon Grazio, MD, PhD, head of University Department of Rheumatology, Physical Medicine and Rehabilitation, Sestre milosrdnice University Hospital, and Asst. Professor Damir Kovač, MD, PhD, neurosurgeon from University Department of Neurosurgery, Sestre milosrdnice University Hospital. As previously, this year’s Symposium gathered a great audience of more than 150 physicians of various specialties (e.g., psychiatrists, orthopedists, family medicine physicians, and others) from all over Croatia.

The welcome address given by Professor Krešimir Rotim, MD, PhD, director of Sestre milosrdnice University Hospital, and foreword by the Symposium moderator, were followed by the first lecture on the epidemiology of thoracic spine diseases and conditions, held by Head Doctor Zdena Gnjidić, MD, MS, from Drago Cop Polyclinic for Rheumatic Diseases in Zagreb. In her lecture, Dr. Gnjidić emphasized that pain in thoracic spine might be caused by changes in the spine and spine related structures, but also by alterations involving the gastrointestinal, cardiopulmonary and renal systems. Thus, pain and dysfunction of
Thoracic spine may develop in primary and secondary osteoporosis, hyperkyphosis, ankylosing spondylitis, degenerative spine disease and Scheuerlein's disease; however, it may also be underlain by inappropriate posture due to prolonged static load, e.g., sedentary lifestyle. It is estimated that 3.5%-35.3% of individuals will suffer from thoracic pain sometime in life-time, and according to most studies these discomforts are mainly transient and of short duration.

The second lecture presented by Matej Murtapić, MD (with Head Doctor Igor Borkić, MD, MS, and Professor Miljenko Matotti, MD, PhD, as coauthors) from Clinical Department of Diagnostic and Interventional Radiology, Sestre miloradnice University Hospital, dealt with radiologic diagnosis of thoracic spine diseases and conditions and described a number of radiologic imaging methods, each of them characterized by some advantages as well as shortcomings. The methods may occasionally be mutually exclusive; however, more frequently they supplement each other to reach definitive diagnosis. Appropriate choice of a particular radiologic imaging method to provide the most comprehensive insight into the problem requires familiarity with their possibilities, distinct clinical request, and above all tight collaboration between clinicians and radiologists as leaders of the diagnostic team.

This lecture was followed by another one on thoracic spine degenerative disease and painful thoracic syndrome, presented by Tomislav Nemčić, MD, from University Department of Rheumatology, Physical Medicine and Rehabilitation, Sestre miloradnice University Hospital. Dr. Nemčić emphasized that pain in thoracic spine could originate from spinal muscle, intervertebral disks, facet joints, change in the region of spinal canal or anomalies of the spinal column. About 90% of disk hernias in the region of thoracic spine occur due to degenerative changes of intervertebral disk, yet symptomatic hernias are very rare, accounting for less than 1% of all symptomatic disk hernias. The thoracic syndrome symptomatology is very diverse, ranging from local pain and atypical pain distribution to myelopathy. The goal of treatment is to reduce pain, thus also improving spinal function. Analgesics are the most common modality of conservative therapy, while medical gymnastics is almost regular part of functional treatment, aiming to reduce pain, develop muscular trunk and spine support, and reduction of stress upon intervertebral disk and other static spine stabilizers.

Fran Grubišić, MD, MS, from University Department of Rheumatology, Physical Medicine and Rehabilitation, Sestre miloradnice University Hospital, spoke about conservative treatment of osteoporosis in the region of thoracic spine, with special reference to osteonabolics. Prevention of osteoporosis and osteoporotic fractures is one of the major goals of treatment and includes modification of particular habits, calcium and vitamin D supplementation, and use of appropriate antiresorptive or osteoanalobic agents. Two osteonabolic agents are available to our patients: teriparatide and strontium ranelate. These agents can significantly reduce the risk of vertebral osteoporotic fractures and improve the patient quality of life.

A lecture on thoracic spine in spondyloarthritides was held by Professor Simeon Gradio, MD, PhD, from University Department of Rheumatology, Physical Medicine and Rehabilitation, Sestre miloradnice University Hospital. Professor Gradio spoke on spon-
Vertebral osteomyelitis is one of the main characteristics of spondyloarthritis to be most pronounced just in the region of thoracic spine. Structural changes, ossification of ligaments and articular capsules, and paravertebral muscle tension contribute to reduced spinal mobility and restricted chest expansion, thus abdominal breathing prevailing over thoracic breathing. Besides nonsteroidal antiinflammatory and physical therapy, biologicals and tumor necrosis factor alpha (TNF-α) blockers in particular, proved to be most efficacious in the management of spondyloarthritis.

The first part of the Symposium ended with a lecture on infections in the region of thoracic spine, presented by Professor Miroslav Lisić, MD, PhD (with Klauđa Višković, MD, PhD as a coauthor) from Dr. Fran Mihaljević University Hospital for Infectious Diseases in Zagreb. Professor Lisić said that vertebral osteomyelitis (spondylodiscitis) may develop in three ways, i.e., by hematogenous spread from a distant focus, by direct inoculation due to trauma or surgical procedure, and by dissemination from the surrounding inflamed structures. The bacterium *Staphylococcus aureus* is the most common cause of vertebral osteomyelitis, however, infection with *Mycobacterium tuberculosis* that mostly involves lumbar and lower thoracic vertebrae is by no means uncommon. Magnetic resonance is the most sensitive diagnostic method, while treatment should be tailored according to antimicrobial sensitivity of the causative agent identified. Treatment usually takes 6-12 weeks and operative procedure is needed in only some patients. A combination of four antimycobacterials (isoniazid, rifampin, pyrazinamide and ethambutol) administered for 6-12 months are used in the management of spinal tuberculosis.

The second part of the Symposium was dedicated to surgical topics, i.e., modalities of operative treatment for thoracic spine diseases and conditions. Professor Vladimir Kovač, MD, PhD (with Mislav Ćimić, MD, MS as a coauthor) from University Department of Orthopedics, Dubrovnik University Hospital, spoke about reconstructive procedures in thoracic spine surgery. This lecture showed anterior instrumentation to produce better results in scoliosis in terms of deformity correction, shorter fusion and lesser neurologic risks. In congenital deformities of the spine, instrumentation with "sliding rods" is employed to avoid any compromise to the child's growth. Short and strongly distorted kyphotic deformities are corrected by anterior mobilization, whereas long and flexible deformities are managed by posterior techniques. Posterior instrumentation and anterior fusion offer optimal treatment for spondylitis.

Then, a lecture on surgical approach in case of intervertebral disk hernia in the region of thoracic spine was presented by Zlatko Kokić, MD, MS (with Professor Darko Ledić, MD, PhD as a coauthor) from University Department of Neurosurgery, Rijeka University Hospital Center in Rijeka. Thoracic spine has specific anatomical characteristics (rigidity, chest, vascularization, kyphosis, etc.), which greatly dictate
the choice of surgical techniques in the management of
toracic disk herniation. Intervertebral disk hernia in the toracic region frequently occurs in the form
of disk-spondylolpathy complex, which poses a high
operative risk, thus the modalities of optimal surgical
treatment of the thoracic spine degenerative disease
have not yet been defined.

Darko Perović, MD, PhD (with Head Doctor
Zvonimir Kejlić, MD, Dražen Kvesić, MD, and Nenad
Somaun, MD as coauthors) from University Hospital
for Traumatology in Zagreb spoke about current therapeu­
tic approach to thoracic spine injuries. According
to this report, TH11, TH12 and L1 vertebral fractures
account for more than 50% of all spinal fractures. In
the group of patients free from neurologic deficit, avul­
sion and stable fractures are managed conservatively by
bed rest and analgesics, and occasionally by external
stabilization with orthosis. Unstable fractures require
internal fixation and intervertebral fusion, while dis­
locations also demand controlled open repositioning.
Current approach with the use of titanium implants
and autologous bone enable excellent restabilization
of the spinal column and fast resuming all daily activi­
ties. Decompression may also be occasionally required
in patients with neurologic deficit. Dr. Perović (with
Professor Gojko Buljat, MD, PhD as a coauthor) held
another lecture on the possible operative treatments
of osteoporotic fractures in the region of thoracic
spine. Osteoporotic fractures most commonly occur
in the area of thoracolumbar spine and can be classi­
fied into four groups: (A) single-level acute fracture;
(B) multiple fractures with body center derangement;
(C) chronic persistent instability – pseudoarthrosis;
and (D) fractures with spinal stenosis and neurologic
manifestations. Group A and B fractures are generally
treated with analgesics and external immobilization
with the use of orthosis. In patients susceptible to ma­
jor collapse of vertebral body, vertebroplasty with high
viscosity osseous cement has proved useful, while the
latest technique of intervertebral stent implantation
allows for nearly complete restitution of the vertebral
body height. In group C and D fractures, open reposition­
ing and internal fixation are needed, while group
D fractures also require spinal canal decompression.

The experiences acquired by neurosurgeons of the
University Department of Neurosurgery, Sestre
mišorsrdnice University Hospital, in the current surgi­
cal treatment of thoracic spine tumors were presented
by Karlo Hora, MD, PhD (with Professor Krešimir
Rotim, MD, PhD, Asst. Professor Damir Kovač,
MD, PhD, and Robert Safiđić, MD, MS as coauthors).
They reported on the results of operative treatment of
67 patients with primary tumors of thoracic spine in
the past 15 years. There were four patients with extra­
dural tumors, 48 patients with intradural extramedullary
umors and 15 patients with intramedullary tumors.
Intramedullary tumors were mostly of glial
origin, whereas meningiomas predominated among
intradural extramedullary tumors. It was emphasized
that postoperative morbidity in patients with thoracic
spine tumors, and those with intramedullary tumors
in particular, could be considerably reduced with the
use of intraoperative monitoring of somatosensory
and motor evoked potentials.

The last lecture, held by Tatjana Nikolić, MD,
from University Hospital for Traumatology in Zga­
reb, discussed patient rehabilitation after surgical
procedures in the region of thoracic spine. Dr. Nikolić
emphasized the role of postoperative rehabilitation in­
dividualization. Every rehabilitation program begins
with patient verticalization on the very first postop­
erative day and walking as tolerated. Thoracolumbar
spine movements are not allowed in early postop­
erative rehabilitation, but upper and lower extremity
range of motion exercises can be performed. The ac­
tive rehabilitation program can be initiated between
postoperative week 4 and 6, and includes back muscle
exercises and cardiovascular fitness program. Active
range of motion exercises, extension in particular, can
be included towards the end of week 6; active trunk
muscle and paraspinal muscle exercises between week
8 and 12; and gradual resumption of all daily activities
between week 12 and 16; contact sports are not al­
lowed until at least 6 months of operative procedure.

Fruitful and vivid discussion took place after the
lectures (moderators: Professor Simeon Grazio, MD,
PhD, and Asst. Professor Damir Kovač, MD, PhD),
followed by informal gathering and snack.

In conclusion, the participants of the Thoracic
Spine – A Neglected Portion of the Spine Symposium
have certainly gained new concepts or clarified some
dilemmas, to the benefit of our patients with thoracic
spine discomforts.

Tomislav Nemetić

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