Ministry of Health Protection of Ukraine
Poltava State Medical University

Approved
at a meeting of the department
pediatric surgery
with traumatology and orthopedics
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Methodical instructions
for independent work of students
in preparation for the practical training and in the classroom

Academic discipline	Traumatology and Orthopedics
Module № 1	Traumatology and Orthopedics
Content module № 3	Degenerative-dystrophic, inflammatory and tumoral diseases of the extremities and joints
The topic of the lesson	Scoliosis
Course	5
Faculty	Medical

Poltava 2021

1. Actuality of theme:

A scoliosis is a frequent orthopaedic disease - among child's population meets to 5 and even to 9%. Heavy forms of deformation of backbone among them are 0,5-0,6%. Progress of deformation of backbone causes the change of form of thorax, pelvis inevitably. A heart, lungs, organs of abdominal region and pelvis that is accompanied by the parafunction of breathing and hemodynamics, is pulled in a pathological process. In start cases there is hyperextension of nervous counterfoils, counterfoil pains, and for some patients is a prelum of spinal cord with development of spastic paralyses.

2. Educational aims:

- To become familiar with clinical and CPhE presentation of diseases of backbone.
- To know about principles of diagnostics, treatment and prophylaxis of scoliotic illness.
- To master terminology, classification, general features of flow of disease, principles of early recognition.
- To master the basic moments of prophylaxis, conservative and operative treatment.
- Able to conduct the differential diagnosis of diseases of backbone and lacks of posture.
- To capture the methods of determination of degree of violations, receptions of CPhE, massage.
- Able to define testimonies to the surgical method of treatment of scoliotic illness.

3. Base knowledge, abilities, skills necessary for the study of theme:

Discipline	To know	Able
Normal anatomy	Anatomic structure of vertebrae of different departments of backbone, ligamentary vehicle of backbone, feature of blood supply	To define the physiological bends of backbone
Topographical anatomy and operative surgery	Topographical and anatomical features of backbone	To ground rational operative accesses on the different departments of backbone
Radio Therapy	X-ray picture of backbone in a norm and at pathology	To define the pathological X-ray changes of backbone
Paediatrics	Principles of inspection of children with violations of locomotorium	To define violation of posture

Physiopathilogy	Regeneration bone and cartilaginous tissues of formative a backbone	To set the degree of violation, phase of disease

4. Materials for before auditorium of independent work

4.1. Reference map for independent work with literature on the topic «Congenital diseases of the spine, bones and joints».

Basic Tasks	Pointing	Answers
To learn:		
Etiology	To name the purchased scoliosis	1. Congenita 2. Dysplastic 3. Neurogenic 4. Dystrophy and dysmetabolite 5. Idiopatic 6. Other (traumas, tumours etc.)
Pathogeny	To name nosotropic factors	1. Primary 2. Creating general pathological background of organism 3. Static and dynamic violations
Classification	To bring classifications over of scoliosis	1. By reason of development. 2. On localization. 3. On clinical displays
Clinic	To define the basic clinical symptoms of scoliosis	Asymmetry of upper shoulder area, shoulder-blades, deformation of backbone, thorax, appearance of muscular roller, costal hump, inclination of pelvis, cardiovascular, respiratory and spine disorders
Diagnostic	To bring methods over of determination of degree of deformation of backbone	1. Kobba 2. Fergusson 3. Albamasova
Conservative treatment	To name basic methods	1. General tonic 2. To the active and passive correction of backbone 3. Supporting the attained effect treatments
Surgeon treatment	To name the groups of operative interventions, define a testimony to each of them.	1. Preparatory 2. Medical and preventive 3. Antihunt 4. Correcting 5. Urgent

		6. Cosmetic
Prophylactic	To name the measures sent to the prophylaxis of scoliosis	1. The correct mode of life is in family 2. Making healthy through sanatoriums, camps and etc 3. Bringing in to going in for sports 4. Prophylactic examinations

4.2. Professional algorithms in relation to a capture by skills and abilities:

Tasks	Pointing	Notes
To inspect sick	To collect complaints, set anamnesis of disease and life	To pay attention to etiology of disease
To set a X-ray diagnosis	To define the degree of deformation of backbone in number of different ways	To pay attention X-ray signs of possible progress of pathological process
To appoint the plan of conservative treatment	To define curative measures for a holiatry on the certain stage of disease, to set their sequence	To pay attention to speed of progress of pathological process, degree of defeat
To ground the method of surgical treatment	Considering on the state of patient, speed of progress of process, degree of deformation to define an aim planned interference, to choose optimal methodology of operation	To pay attention to postoperative period
To work out a plan prophylactic measures	Depending on the stage of violation to choose the rational complex of prophylactic measures	To pay attention to obligatory dynamic supervision of patients by a scoliosis

4.3. Table of contents of theme

All existent forms of scoliosis can be divided into two basic groups: congenita and purchased.

Depending on reasons, distinguish six basic groups of illness:

- congenita scolioses;
- dysplastic: arise up on a background spondilodysplasia, myelodysplasia, myelosyringosis, neurofibromatosis, myopathy;
- neurogenic scolioses: after poliomyelitis; meningoethephalitis or child's cerebral paralysis; pain neuroreflectoral;
- dystrophy and dysmetabolite scolioses;

- idiopathic scolioses ;
- scolioses, that arose up from different reasons: thorax after a trauma, rachitis, trachelokyphosis, tumours of backbone.

For an origin and progress of scoliosis necessary connection of three factors:

1) primary noxa,

2) factors that creates the general pathological background of organism,

3) static and dynamic violations.

Clinic and diagnostic of scoliosis.

Clinical presentation of disease depends on the type of scoliosis, character and degree of deformation.

By the nature deformations of backbone distinguish:

C-like a scoliosis has one arc of curvature. As independent deformation meets after the trauma of backbone, trachelokyphosis or can be the initial display of scoliotic illness.

S-like a vivid scoliosis in a backbone creates two arcs directed in opposite parties. It is more often necessary to look after uncompensated S- similar scoliosis, when a primary arc on the degree of curvature considerably excels secondary.

Total scoliosis - by a distinctive feature there is that, almost all pectoral and lumbar vertebrae that form one declivous arc are pulled in curvature.

Types of scolioses.

1.Neck-thoracal (or upper thoracal) - Th2 - Th6.

2.Thoracal - Th6 - Th10.

3.Thoracal-backache (or lower thoracal) - Th10 - Th12.

4.Lumbar - L1 - L3.

5.Combined, S- similar.

What a scoliosis appeared before, i.e. than younger sick, the he owns a large potential height and the deformation of backbone can make progress anymore. The most dangerous age for development of scoliosis is 12-13.

Risser suggested to judge about completion of height of backbone on the state apophis of coccygeal of bone.

Sign of Kone - on the concave side of curvature not narrowing of inter vertebres cracks, and, vice versa, expansion. Rounding of bodies of vertebrae educed and oval at the same time toward a concavity. At presence of symptom, deformation of backbone will make progress.

Sign of Movshovich - there is a relative osteoporosis of lower back segments of vertebrae on the protuberant side of arc of curvature. At presence of this sign deformation of backbone makes progress steadily.

Methods for measuring of size of scoliotic arc.

Method of Kobb - the size of scoliotic arc is measured on a sciagram by a corner, form crossing of the perpendiculars recovered to the horizontal axis of neutral vertebrae. A neutral vertebra is determined on in parallel going arthral surfaces and centrally located spinous sprout.

Method of Fergusson - calculate the size of corner of arc, form from crossing of lines, that connect the middle of the neutrally located vertebrae (shade of spinous sprout) with the middle of the vertebra located on the top of curvature.

Method of Abalmassova - the corner of deformation consists of size of intervertebral interval and wedge like deformation of body.

Clinical classification of Chaclin distinguishes 4 degrees of scoliosis depending on expressed of scoliotic arc.

Prophylaxis of scoliosis.

1. A correct rhythm and mode of life in family are a feed, rest; a culture is general and physical.

2. Making healthy of children through sanatoriums, camps, flying summer residences.

3. Bringing in to the mass types of sport that provides harmonious development of child (swimming, skis, gymnastics of and other).

4. Prophylactic examinations are in kindergartens, schools for the exposure of children with a vicious posture, platypodia, by congenita deformation of thorax and other defects that render assistance to the origin and development of scoliosis.

Conservative treatment:

- it is general Tonic treatment;
- are methods of active and passive correction of backbone;
- are methods that support the attained effect of treatment.

Operative treatment.

By testimonies for operative treatment of patients with a scoliosis is: uneffectiveness of conservative treatment and progress of deformation; scolioses on soil of poliomyelitis; scolioses caused by the anomalies of development of backbone; difficult forms of scoliosis, that is accompanied by pains; compression of spinal cord because of twisting of backbone; sharply expressed costal hump.

Groups of operative interventions :

- preparatory;
- medical and preventive;
- antihunt;
- correcting;
- urgent;
- cosmetic.

All numerous surgical methods of treatment of scoliotic illness the deformations sent to warning of progress and spondypodes close in the total, functionally by the unprofitable state of backbone - real estate. Therefore a prophylaxis of scoliosis is an exposure of children with a pathological posture, by the dysplastic changes of the locomotorium system and correct treatment of children with a disease that begins is basic direction of this problem.

In warning of progress of scoliosis and holiatry his considerable role is taken to the specialized kindergartens, toboarding-schools, sanatoriums.

Materials for self-control

A. Questions for self-control:

- Etiology of scoliotic illness.
- Pathogeny of scoliotic illness
- Classification of scoliotic illness

- Clinic-rentgenological displays of scoliotic illness
- Holiatry of scoliotic illness.

B: Tests for self-control: see an appendix

C: Tasks for self-control: see an appendix

Recommended literature

The main literature:

1. Traumatology and orthopedics : textbook for students of higher medical educational institutions / edited by Golka G. G., Burianov O. A., Klimovitskiy V. G. – Vinnytsia : Nova Knyha, 2018, – 400 p. : il.

2. Venger V. F. Serbyuk V. V. Rashed Mochammad. Traumatology and orthopedics. – Odessa: Druk, 2006. – 248 c.

3. Bur'yanov O. A. Traumatology and Orthopedics. K.: Medicine, 2007. – 216 c.

Background Information:

1. David J. Dandy, Dennis J. Edwards Essential Orthopaedics and Trauma, Churchill Livingstone Elsevier, 2009, - 490 p.

2. David L. Hamblen, A. Hamish R. W. Simpson Adams's Outline of Orthopaedics, Churchill Livingstone Elsevier, 2010, - 485 p.

3. Ronald McRae, Max Esser Practical fracture treatment, Churchill Livingstone Elsevier, 2008. – 447 p.

4. Ronald McRae Clinical orthopaedic examination, Churchill Livingstone Elsevier, 2010. – 323 p.

5. David J. Dandy, Dennis J. Edwards Essential Orthopaedics and Trauma Churchill Livingstone Elsevier, 2009, - 490 p.

6. Borland WA. Illustrated Medical Dictionary. - 29th edition. -Philadelphia, 2003.

Internet resources:

https://www.4tests.com/usmle#StartExam

http://goto.grockit.com/kaplan/quizzes/medical.php?utm_source=kaptest&utm_medium=

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qzzer

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http://www.medscape.com/index/section_1436_0

http://www.webmd.com/a-to-z-guides/quizzes/

http://www.medicinenet.com/quizzes_a-z_list/article.htm

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http://hardinmd.lib.uiowa.edu/index.html

https://www.youtube.com/user/nucleusanimation/videos

http://www.medicalstudent.com/

http://www.thestudentroom.co.uk/wiki/Resources_for_Medical_Students

http://www.nucleuscatalog.com/

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