

CLINICAL AND X-RAY CHARACTERISTICS AND DYNAMICS OF DYSPLASTIC CHANGES IN THE BONE SYSTEM DURING ONTOGENESIS

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In the course of the study, the features of clinical data and radiographic changes in the osteoarticular system of 2078 children in different age periods from 7 days to 18 years were studied. Changes in the spine, joints of the lower extremities and long tubular bones were evaluated. Radiographs were performed in standard projections. MRI and CT studies were performed in 415 children to clarify the morphological changes in the spine and knee joints.

MATERIAL AND METHODS

According to the X-ray characteristics and age-dependent classification of the stages of the postnatal formation of the osteoarticular system by V.I. Sadofieva (1990), the data obtained were divided into 5 groups (Table 1).

RESULTS AND DISCUSSION

Out of 204 examined children of the first group, in 176 (86.3%), asymmetry of the head position was revealed, more often with a right tilt and a turn to the left, a paravertebral muscle strain in the cervical spine, a painful palpation reaction, a tendency to roll back the head and a low muscle tone of the upper and lower limbs. At X-ray examination, there was a lack of structural disturbances, a decrease in the posterior craniocerebral distance due to rotation of the occipital bone, lateralization of the lateral masses of the atlant.

In the second group of 238 children aged 11 months up to 4 years on the roentgenograms of the cervical spine, cervical lordosis was smoothed, kyphosis in the middle section (67%), asymmetry of the atlas's lateral masses (11%), incongruence of the joint at the level of C0–C1–C2 (71%), initial signs of hypermobility. Clinically, this determined the hypotension of the muscles of the lower extremities with the valgus of the knee joints, flat-valgus feet. The hypertension of the calf muscles is noted, the extension of the feet is limited



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Table 1. Distribution of children by age, sex and radiographic signs of functional and structural disorders (N 2078)

Group	Age	Characteristics	male abs.%	female abs.%	total abs.%
1.	7 days to 10 months	Initial radiographic and functional characteristics of dysplastic development of the spinal column	96 (4,6%)	108 (5,2%)	204 (9,8%)
2.	11 months to 4 years	X-ray manifestations of asymmetry of articulation C1-C2, formation of kyphosis of middle spine	112 (5,4%)	126 (6%)	238 (11,4%)
3.	5–8 years	Initial signs of degenerative-dystrophic changes in the cervical and lumbar spine	231 (11,1%)	223 (10,7%)	454 (21,8%)
4.	9–14 years	Development of structural disorders of the spinal column and initial functional changes in the knee joints	277 (13,3%)	320 (15,4%)	597 (28,7%)
5.	9–14 years	Formation of fixed deformities of the osteoarticular system	223 (10,7%)	362 (17,4%)	585 (28,1%)
Total			939 (45,2%)	1139 (54,8%)	2078 (100%)

and the tendency to walk on the toes is limited. In the cervical part, a disruption of rotation, stoop, lumbar hyperlordosis.

In the third group there were 454 children aged 5 to 8 years with dysplastic changes in the musculoskeletal system. Manifestations of pathology at this age were violations of posture, the emergence of vegetative and functional disorders, the growth of the clinic of vegetative-vascular disorders, the pathology of the hip joints in boys and functional disorders in the knee joints, more often in girls. On the roentgenograms of the cervical calving of the spine, degenerative-dystrophic changes of the spinal column, an increase in kyphosis in the middle sections of the cervical spine, deformation of the lateral masses of the atlant, clearly showed signs of incorrect development.

Radiation methods of diagnosis in 97 boys of the main group at the age of 5 to 8 years revealed osteochondropathy of the femoral heads. In 37 children (38.1%), the process was bilateral, otherwise there was a one-sided defeat. In girls, the frequent pathology of the lower limbs was a valgus set of knee joints with internal rotation of the shins and a flat-valgus deformation of the feet. The provoking factor was significant sports loads (training 5-6 times a week for 2–3 hours) and active growth during the period of physiological stretching.

In 597 adolescents aged 9 to 14 years, the main segments of the lesion were various parts of the spine, knee joints. Objectively there was an asthenic physique, a decrease in the muscular tonus of the upper and lower extremities, valgus deviation (10–15°), and internal rotation of the legs (up to 20°), flat-valgus stop, hypermobility of the peripheral joints. The posture has been broken due to the strengthened thoracic kyphosis and lumbar lordosis. Movement in the cervical spine was limited due to rotation in both directions (up to 20–30% of the normal volume of movement).

X-ray patterns in the cervical spine showed asymmetry of the C1–C2 articulation, Kimmery anomaly,

saddle-shaped deformation of the atlas's lateral masses, kifosis of the middle section, platipondylia; an increase in kyphosis in the thoracic, scoliosis, wedge deformation of bodies D 6–9, narrowing of intervertebral spaces, subchondral sclerosis; in the lumbar spine, non-growth of the posterior arches L5 and S1, anomalies of tropism, hyperextension of the sacrum.

In the course of the study, radiological changes in the osseous and articular system of 585 adolescents aged 15 to 18 years were revealed. The majority of patients had signs of osteochondropathy of the spinal column, degenerative-dystrophic lesions of the cervical spine, instability of the structures of the knee joints, diseases and deformities of the feet. When X-ray diffraction of the cervical spine in children of the main group, asymmetry of the C1–C2 articulation, kifosing, initial degenerative antheliosis in the spinal-motor segments at the C2–C4 and C4–C6 levels, deformation of the vertebral bodies was found. In the thoracic spine, there are signs of osteochondropathy (Sheyerman-Mau disease) in boys. In the lumbar spine on radiographs and CT data, various diseases and anomalies were identified in the form of non-extension of the posterior arc of L5, scoliosis, and osteochondropathy.

The data presented indicate an increase in pathological structural changes in bone tissue during ontogenesis, increased functional disorders and their severity. As a rule, they have no tendency to self-correction, contributing to the early development of degenerative-dystrophic processes.

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