

## ОРТОПЕДИЯ ЖӘНЕ ТРАВМАТОЛОГИЯ | ОРТОПЕДИЯ И ТРАВМАТОЛОГИЯ ORTHOPEDICS AND TRAUMATOLOGY

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### CLINICO-RADIOLOGICAL DIAGNOSIS OF BONE ECHINOCOCCOSIS ACCORDING TO LONG-TERM OBSERVATION

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*Due to the difficulties of diagnostics and differential diagnostics of seldom observed echinococcosis of bones and representing clinical interest the short clinicoradiological characteristic of an echinococcosis of bones according to literary data in a comparative assessment of clinical material on the basis of 10 observations (from 1971 to 2011 is provided) with a backbone lesion (at 4 patients), pelvic (at 3 patients), humeral (1 patient), femurs (1 patient), ribs (1 patient)*

**Keywords:** *Echinococcosis, bone lesion, radiodiagnostics*

**The purpose** of this report is a demonstration of opportunities of radial methods of diagnostics at identification of an echinococcal lesion of a locomotorial system.

The main carrier of a parasite are dogs, eggs aworm in a huge number jump out with excrements outside, the scolex which got to an organism of the casual intermediate owner (person) is soaked up through an intestine and first of all gets to a liver. To the lungs scolex of a parasite get by a small circle of a blood circulation. The parasite gets to other organs through a big circle of blood circulation and is carried on blood current in any organ. The rarity of a lesion of other organs is explained by existence of hepatic and pulmonary barriers.

The echinococcus of a bone was for the first time described by Hyunter-Cullerye in 1800, the X-ray pattern of an osteal lesion of an echinococcus was for the first time given by Bayer in 1912. Consider that the germ of a parasite is brought by current of a blood and, being late, develops in capillaries of a bone tissue. According to literary data the echinococcus of bones is observed seldom, in 1-3% of all localizations of a parasite. Favourite localization of a parasitic lesion are the backbone, haunch bones (is more often ileal), femoral, humeral, tibial bones, e.t, in a backbone –

40%, haunch bones – 30%, other 30% in ribs and long tubular bones (metaepiphyseal zones) [1,2,3,4].

**Materials and methods:** There was an observation of 10 patients with an echinococcal lesion of bones, 4 patients of them have vertebraes struck: the thoracal – at 2, a sacrum at 2; haunch bones at 3, a humeral bone at 1, a femur at 1, and 1 patient has damage of ribs together with a lesion of liver and lungs. The clinical picture has no specific implication. On a floor and age echinococcus of bones in our material was observed at 8 men (at the age of 26, 30 – 40, 44, 57 years), at 2 women at the age of 11, 26 years.

Growth of an echinococcal cyst in bones leads slowly and lasts for a number of years. The main clinical sign is acritical pains in the field of the struck bones.

In the course of radiodiagnostics for this patients the X-ray inspection of a thorax, spine column, humeral bones and a sacrum was conducted. The computer tomography of an abdominal cavity at 3 patients was provided.

**Results and discussion:** At the X-ray inspection of a backbone in the field of an affected area there is an augmentation of the sizes and deformation of bones in the beginning. Then there is a sclerosis, a necrosis and a sequestration. On the X-ray of an echinococcal lesion of a backbone a picture of an extramedullary tumor reminds. The X-ray pattern is characterized by existence of the rounded oval, incorrectly polygonal, small or more serious defects of a bone tissue parted by osteal septums of various thickness. The bone is like blown up, the cortical layer becomes thinner, the surface of a bone becomes tuberous; periosteal reaction is absent, or is expressed slightly. For an echinococcus of a backbone destructive process of vertebral bodies, and also processes and near sites of ribs without of cyst enlightenments is characteristic. On the Xrays of a backbone spherical honeycomb cavities in bodies of the struck vertebrae bordered with thin sclerosed walls are defined.

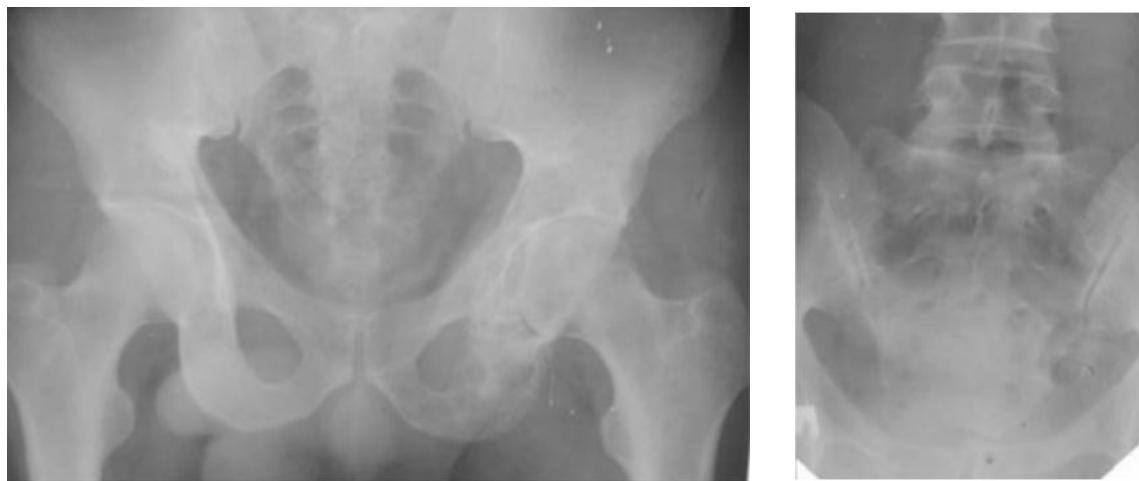


Figure 1 - Echinococcal lesion of a backbone in direct and lateral projections

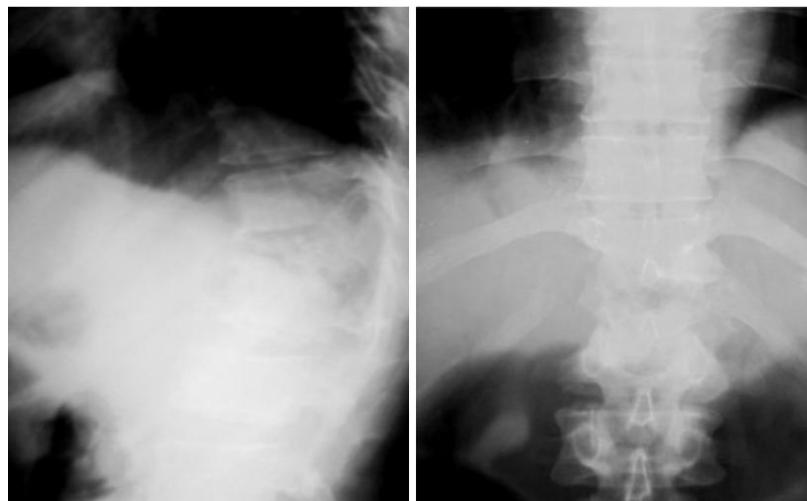


Figure 2 - Echinococcal lesion of a backbone in direct and lateral projections

For an echinococcal lesion of vertebrae lack of changes of intervertebral cartilages that is a differential diagnostic sign between a tubercular spondylitis and an echinococcosis of a backbone is characteristic. The intervertebral cartilage long time remains not struck unlike a tubercular spondylitis, in a vertebra body a honeycomb enlightenment with sclerosed thin walls (a type of honeycombs with the wrong cells), reactive changes (regional osteal growths - osteophytes) in surrounding tissues are absent.

The echinococcal cyst in the field of vertebrae, in a phase of not opened cyst, is defined on the X-ray in the form of blackout of a spherical form, various sizes, and is localized ahead of bodies of vertebrae and is clearly delimited from other osteal structures.

Other implication of echinococcus in our material was an establishment of paravertebral localisation of tumor. In certain cases deformation of vertebrae led to formation of a cyphotic curvature owing to a lesion of bodies of vertebrae. This cyphotic rachicampsis is complication of a parasitogenic lesion of a backbone. The following complication of an echinococcal lesion of bones is the pyesis of aparasitogenic cyst on a current and the X-ray pattern reminding an osteomyelitis.

Reynberg S. A. (1964) claims that at a parasitogenic lesion of a backbone there are no compression fractures of bodies and formation of «back hollow». Meanwhile, in one of 4 cases with a backbone lesion, with extensive destructive process in body.



Figure 3 - Echinococcal lesion of a ribs

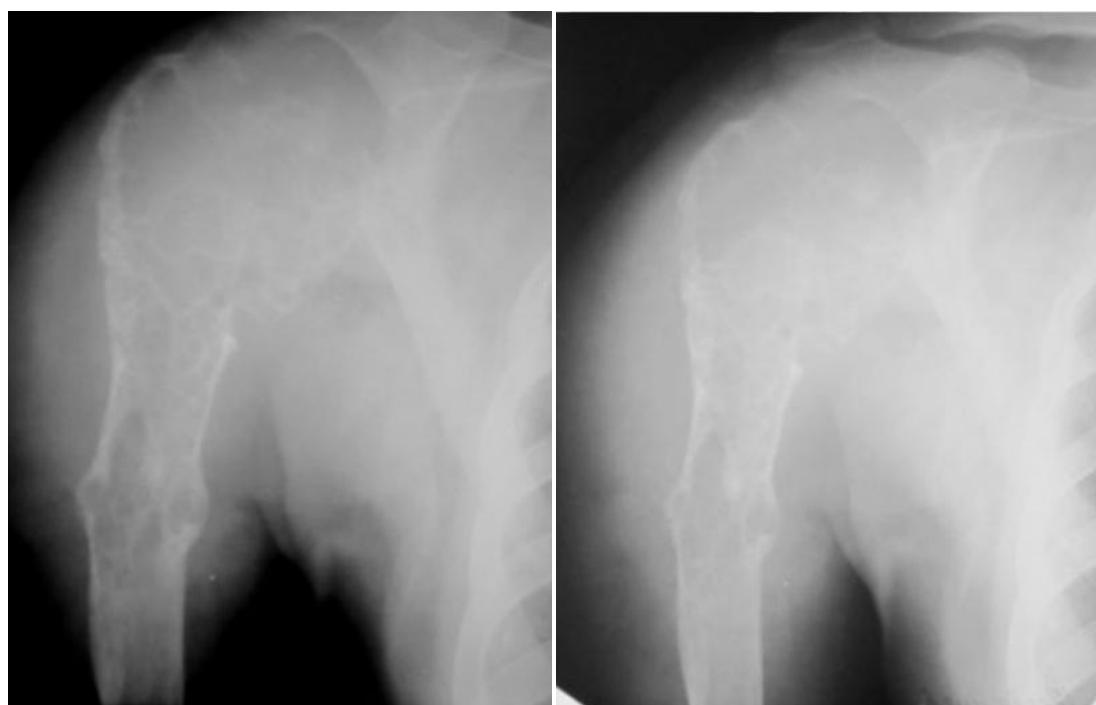


Figure 4 - Echinococcal lesion of a humeral bone

Of ThXII, a clinoid compression ( $^{222}$  degrees) and formation of kyphotic «back hollow» with massive paravertebral lateral (from both sides) and an antevertebral smoothtissue component became perceptible. These changes were regarded as tubercular abscess, and destructive process in body of ThX $^{22}$  - as a tubercular spondylitis and antituberculous treatment was carried out to tubercular hospital,

and the echinococcal lesion of a backbone was distinguished only after an operative measure. At a long current of an echinococcus of a backbone the lesion extends on bodies of interfacing vertebrae, transversal and spinosal processus, an also adjacent parts of ribs. Paravertebrally sideways or ahead of a backbone is taped a shadow with accurate contours – so-called echinococcal sinter abscess, unlike

tubercular abscess settles down usually on the one side a backbone.

At an echinococcal lesion of a sacrum (fig. 2) the X-ray reminded a chondroma. The diagnosis was established after an operative measure. Such picture was observed in 2 cases.

In one case allegedly the diagnosis of an echinococcus of ribs is exposed taking into account the anamnesis (operation for a liver echinococcus more than 20 years ago). (fig. 3)

In other case taking into account in the anamnesis of an echinococcosis of other organs and operative measures concerning an echinococcus of a lung and a liver (2 years ago), the diagnosis of an echinococcal lesion of a wing of an ileal bone according to a computer tomography of a pelvis (17.03.2011), operation 18.03.2011 – confirmation of the diagnosis. The X-ray is not typical for an echinococcal lesion of a bone, in a case with a backbone lesion in thoracal department the diagnosis before operation a tubercular spondylitis was made (in a tuberculous hospital), in 2 cases of an echinococcus of a sacrum a differential series was put: chordoma, giantcell tumour (GCT). Differential diagnostics of an echinococcosis of bones is difficult, covers the extensive list of diseases: tuberculosis, osteomyelitis, syphilis, all types of a fibrous osteodystrophy and a dysplasia, a hemophilic osteal cyst, some reticuloendothelial diseases, a neurogenic osteoarthropathy, tumors (a chondroma, especially a hemangioma) and malignant (a metastatic cancer and multiple myelomas), and in our opinion and primary cancer.

Laboratory data not always help with diagnostics. In our observations at suspicion on existence of an echinococcal lesion of bones there was a negative reaction of Cazoni (Casoni's synonym - Casoni), and in recent years this assumption doesn't allow to confirm reaction to latex agglutination. On thought of an echinococcal lesion of bones specifies existence in the anamnesis the echinococcal cysts in a liver and a pulmonary tissue. In our case in the analysis at the 1st

patient the echinococcal cyst of a liver (more than 20 years) was removed, on X-rays and on CT-scans (2005) of organs of a thorax 2 formations, one spherical form to 1,5 cm in the diameter in the right lung, typical for an echinococcal cyst were defined, another – in the left lung of the irregular form in the top share was regarded as a blastoma with a rib destruction (as an apical cancer) on a consultation. Along with this opinion on a consultation one of authors of this work (G.I. Khusnutdinova) had other opinion, namely that it is an echinococcosis of a lung and ribs with infiltrative body height (the opinion on a parasitogenic lesion is confirmed at operation). In two cases of a lesion of long tubular bones (a femur-1, a humeral bone-1) process was regarded as a chondrosarcoma in a femur, as a giantcell tumor (GCT) in a humeral bone (fig. 4). In one observation CT of organs of a thorax which didn't clear up in differential diagnostics between echinococcosis and cancer lesion of a lung and ribs is executed, process was estimated as a cancer of the left lung with metastasises in the right lung. Recognition is facilitated in case of germination of a cyst in soft tissues of an extremity and at identification on X-ray calciphied echinococcal cysts.

**Conclusion:** the provided data about an echinococcal lesion of bones show that X-ray with application of computer technology doesn't solve a problem of early diagnosis of this pathology. The diagnosis can be exposed taking into account clinicoradiological data which are confirmed after an operative measure. Accumulation of clinical observations with the confirmed diagnoses of parasitogenic lesions of bones has to improve diagnosis of this pathology. CT and MRI do not clear up diagnostics and differential diagnostics of an echinococcosis of bones, though allow to estimate prevalence of process therefore by the main method of radiodiagnosis and now there is the X-ray examination, then ultrasonic diagnostics for an formation contents assessment (changes in soft tissues, liquid or tissue at an assessment, and an abdominal cavity (liver).

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### **СҮЙЕК ЭХИНОКОККОЗЫНА ҰЗАҚ УАҚЫТ БАҚЫЛАУ КЕЗІНДЕГІ СӘУЛЕЛІ КЛИНИКАЛЫҚ ДИАГНОСТИКА**

**Түйін:** Диагностика мен сүйек эхинококкозы жиі байқалатын дифференциалдық диагностикада пайды болатын қызындықтарға байланысты, клиникалық қызығушылық түрлісінан әдеби мәліметтер мен салыстырмалы клиникалық материалдар (1971-2011 ж. аралығындағы жүргізілген) 10 бақылау негізінде қысқа клинико-рентгенологиялық тексеру әдістері жүргізіледі. Оның ішіде төрт науқас омыртқа зақымдалуымен, үш науқас жамбас сүйек зақымдалуымен, екі науқас ұзын түтінше сүйек, біреуі қабырға зақымдалуымен кездесті.

**Түйінді сөздер:** Эхинококкоз, сүйек бұзылуы, рентген диагностикасы.

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### **КЛИНИКО-ЛУЧЕВАЯ ДИАГНОСТИКА КОСТНОГО ЭХИНОКОККОЗА В СООТВЕТСТВИИ С ДОЛГОСРОЧНЫМИ НАБЛЮДЕНИЯМИ**

**Резюме:** В связи с трудностями диагностики и дифференциальной диагностики редко наблюдающегося эхинококкоза костей и представляющего клинический интерес приводится краткая клинико-рентгенологическая характеристика эхинококкоза костей по литературным данным в сравнительной оценке клинического материала на основе 10 наблюдений (с 1971 по 2011г.г.) с поражением позвоночника (у 4-х больных), тазовых (у 3-х больных), плечевых (1 больной), бедренных костей (1 больной), ребер (1 больной).

**Ключевые слова:** Эхинококкоз, костное поражение, рентген диагностика.