

NEUROLOGICAL COMPLICATIONS OF COEXISTENT COSTOVERTEBRAL TUBERCULOSIS AND PARAVERTEBRAL HYDATID DISEASE – CASE PRESENTATION

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ABSTRACT

In this article, we report an 18-year-old male patient with extrapulmonary paravertebral hydatid cysts with coexisting costovertebral tuberculosis. During the recent years the patient underwent multiple surgical interventions due to recurrent paravertebral abscess in the thoracic region, which resulted in mass effect at the spinal cord and palsy with urinary disorders. The cause of the abscess turned to be coexistent extrapulmonary tuberculosis and hydatid disease. This case emphasizes the importance of considering the coexistence of echinococcosis and tuberculosis in endemic areas.

Keywords: neurological complications of infectious disease, paravertebral hydatid cyst, costovertebral tuberculosis

CASE REPORT

Herein we report an 18-year old male from Comrat (a small town in the southern part of Republic of Moldova) who referred to our in-patient neurorehabilitation clinic with spastic paraparesis and transient urinary incontinence. The condition was due to coexistent tuberculosis of vertebral column and ribs (A18.0+ as per ICD10) and hydatid disease of the lumbar spine, vertebral column and paravertebral muscles (B67.6 as per ICD10).

His past history is set out below. There was no family incidence of tuberculosis. The patient underwent Bacillus Calmette-Guérin vaccination at birth (1996, 0,05 mg intracutaneous). During his early childhood the patient was in close contact with companion animals: dogs and cats. Mantoux screening test at the age of seven was negative and he was revaccinated (2003, 0,1 mg intracutaneous).

In autumn 2009 the patient reported a slightly painful formation with dimensions approximately of 1.0 x 1.0 cm in his right paravertebral region, at the level of Th7 vertebra. He did not pay attention to that condition until spring of 2010, when he was referred to pediatric surgical unit due to increasing volume of the formation (2.0 x 2.0 cm) and appearing of pain in that region. Sputum cultures for acid-fast bacilli were negative, and then an isolated paravertebral tuberculous abscess was suspected. An abscessectomy with draining was made in summer of 2010. Histological examination of the abscess tissue determined coexistence of *Mycobacterium tuberculosis* and *Echinococcus multilocularis*. The patient was assigned to antituberculosis treatment category I DOTS and antihelminthics. In May 2011 the patient was referred repeatedly to the surgical unit due to painful formation in the abscess cicatrix region. Repetitive sputum cultures for acid-fast ba-

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cilli were negative. The patient underwent the second abscessotomy with necrectomy of the left paravertebral abscess at the level of Th7-Th8 vertebrae, excision of the proximal portion of the VIIth rib. Histological examinations determined multiple chitin membranes and granular tissue with macrophages. A diagnosis of Tuberculous spondylitis of Th7-Th8 vertebrae, tuberculosis of the VIIth rib, Echinococcosis granulosa of the bone A18.0 + M49.0 + M90.0, B67.2 (ICD 10) was set.

The patient continued treatment with antituberculosis drugs of category II DOTS. During the period of August 2011 – November 2012 static impairment slightly evolved, with the presence of pain in post-operative region. Computed tomography of the spinal cord in December 2012 revealed subtotal bone destruction of the inferior lamina of the Th7 and Th8 vertebral bodies with pathological fracture formation and scoliosis at this level, destruction of the proximal portions of the 7th and 8th left ribs and left transverse process of the Th8 vertebra. In January 2013 the patient underwent the third surgical intervention: sequestrectomy and costotransversectomy at the level of Th7 vertebra, extirpation of echinococcal cyst at the left paravertebral Th7-Th8 level, radicular decompression. Sputum cultures for acid-fast bacilli were negative.

The patient continued antituberculosis treatment. Repeated computed tomography of the spi-



FIGURE 1. X-ray photography of the thoracic portion of the spinal column dated December 2012. A. Frontal position. B. Lateral position. An abscess with peripheral calcification at the left paravertebral level Th7-Th8 is indicated with arrow.

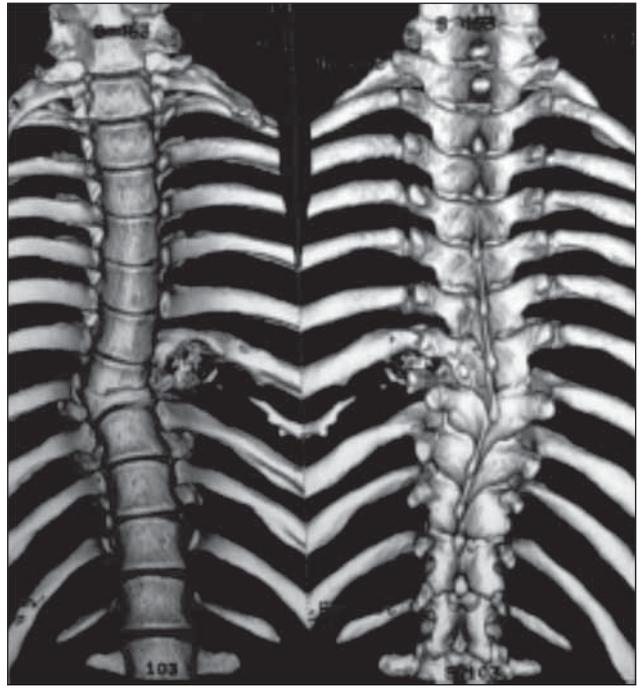


FIGURE 2. 3D reconstruction of the thoracic segment of the spinal column

nal cord in July 2013 revealed pathological fracture of the Th7 and Th8 vertebral bodies. In front of the damaged left vertebrae, in paravertebral region, a cold abscess was determined, with the density of 36 Hounsfield units, size 28 mm, and peripheral calcification.

In November 2013 an acute inferior paraplegia appeared with the onset in about two days, hypoaesthesia below the level of Th10 segment, urinary retention, back pain at the level of Th8-Th10. The patient was referred to the neurosurgical unit with the diagnosis of pathological compression fracture of the Th7-Th8 vertebrae due to tuberculous and echinococcal spondylitis with medullar compression at this level. In December 2013 he underwent the fourth intervention: medullar decompression by laminectomy of the Th6-Th9, corpectomy of the Th7-Th8 vertebrae, circumferential stabilization of the spinal column by spondilodesis and osteosynthesis. During the intervention the spinal cord was found to be severely compressed both by the damaged bone structures and by multiple cysts, 2-3 mm in diameter, with transparent membranes and contents. At the left paravertebral region, intercostal space VII-VIII, an abscess with whitish contents and multiple cysts was found. The cysts and abscess were extirpated and examined, subsequently to be identified as *Echinococcus multilocularis*.

At this presentation the laboratory analyses were performed. Total blood cell counts, erythrocyte

sedimentation rate, complete biochemical serum and urine parameters, coagulation tests were within normal ranges. The patient was assigned to albendazole 400 mg twice daily for three months. In 3 months follow up his neurological status slightly improved.

DISCUSSION

Republic of Moldova is in the area with the highest incidence of tuberculosis among countries of the European Region of the World Health Organization and remains a spread of tuberculosis. Republic of Moldova is among the leaders in the overall incidence of tuberculosis. Tuberculosis remains a major public health problem in Republic of Moldova and the unfavorable epidemiological situation makes the country to face a high burden caused by tuberculosis. The overall incidence of tuberculosis has a rate of 30.9 per 100,000 people, new cases incidence has a rate of approximately 1038 cases or 25.4 to 100,000 population.

Evolution of tuberculosis in Moldova has gained epidemic character since the 1990s due to: deteriorating socioeconomic situation in public health system, inadequate funding of the health system, migration of population, spreading tuberculosis in prisons, lack of efficient drugs and strategies, insufficient support of the National Tuberculosis Control Program for the years 1996-2000.

Also, Republic of Moldova is in the area with high incidence of hydatid disease, what is in connection with the worsening general epidemiological situation in rural areas (the deficiency of veterinary supervision within the private sector farms) as well as in the urban areas (the increasing number of

homelessness canines). According to scientific researches, in Republic of Moldova, the morbidity rates were up to 4.08 cases per 100,000 population during 1980-1996 and 15.5 cases per 100,000 population in the period of 1990-1996. A comprehensive study based on cases of surgically treated hydatid disease in the period of 1980-2010 revealed that during this period there were 4703 people diagnosed with hydatid disease, of the age ranging from 2 to 76 years, 20.1% of whom were children up to 17 years old. Over the recent years the number of new cases was increasing from 47 new cases in 1980 to 233 in 2003. Note that the increased number is caused also by the implementation of modern methods of diagnostics. The average rate of morbidity in the country in the last decade constitutes 4.3 per 100 000 population.

A recent study has suggested a mechanism whereby concomitant systemic helminth infections predispose to the development of active tuberculosis in humans [1]. By analysing the cellular responses to mycobacterial antigens in patients who had latent tuberculosis with or without filarial infection, the study demonstrated that filarial infection coincident with *M. tuberculosis* infection significantly diminishes *M. tuberculosis*-specific Th1 (interleukin [IL]-12 and IFN-gamma) and type 17 T helper (Th17; IL-23 and IL-17) responses related to increased expression of cytotoxic T lymphocyte antigen (CTLA)-4 and programmed death (PD)-1.

During the analysis of retrospective community survey data, we did not find reports with simultaneous extrapulmonary tuberculosis and echinococcosis affecting the central nervous system, thus, representing the first such report for Republic of Moldova.

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