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Extrapulmonary tuberculosis: risk factors and incidence

Gruźlica pozapłucna — ryzyko zachorowania i częstość występowania

Pneumonol. Alergol. Pol. 2011; 79, 6: 377–378

Tuberculosis is transmitted mostly by inhalation. The first lesion develops in the lung and then in the regional lymph node. However, during this initial period, a rapid multiplication of bacilli and their spread through blood and lymphatic circulation to multiple distant organs is taking place. This can lead, especially in young children, to a disseminated form of the disease, called miliary tuberculosis [1]. However, in most cases, the development of immunological reaction inhibits the growth of mycobacteria in all infected sites. Granulomas are formed, composed of epithelioid and giant cells, which surround and limit the foci of caseous necrosis containing disintegrated cells and mycobacteria. Granulomas are usually surrounded by lymphocytes, specifically sensitized to the antigens of *M. tuberculosis*. Some bacilli located within granuloma may, however, survive for a very long time and reactivate in favourable circumstances [2].

Most infections are asymptomatic and infected people remain healthy. The only evidence of this episode is the sensitization of lymphocytes, which can be verified by tuberculin test or interferon gamma release assays (IGRA) — testing the amount of interferon gamma released by lymphocytes exposed to mycobacterial antigens [1]. In some cases however, especially when there is a suppression of the immune system, reactivation of the tubercle bacilli may cause the development of the disease. Most cases of this type of tuberculosis, sometimes called post-primary or „adult-type”, concern the lungs. Much less commonly the reactivation takes place in distant organs, causing so-called extrapulmonary tuberculosis.

According to data from different countries and for different populations, the extrapulmonary involvement accounts for 5–50% of all cases of tuberculosis [3–5]. The incidence of extrapulmonary tuberculosis is higher in populations with reduced immune function. Therefore, extrapulmonary tuberculosis, especially disseminated form is more common in very young children with immature immune system and in elderly people in whom worse function of immune system in advanced age is observed [6–8]. Any diseases impairing the immune function, in particular HIV infection [9, 10], as well as kidney failure, favour the development of extrapulmonary tuberculosis [11]. Pharmacological therapy also may cause immunosuppression, especially post-transplant treatment [12] and also the use of TNF- α (tumour necrosis factor alpha) inhibitors [13, 14].

Genetic factors may also influence the incidence of extrapulmonary tuberculosis [2, 15]. In all studies relating to this issue, it was found that extrapulmonary tuberculosis is significantly more common in females [5, 7, 9, 11, 16–18]. This applies to all types of the disease except for pleural tuberculosis, which occurs more often in males. Extrapulmonary tuberculosis is more prevalent in certain ethnic groups [5, 7, 8, 16]. It occurs very rarely in Caucasians [7, 8]. In the United States, extrapulmonary tuberculosis was particularly common in people originating from South Asia in the absence of HIV infection or other immunosuppressive factors [17].

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Manuscript received on: 21.09.2011 r.
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ISSN 0867–7077

The low incidence of extrapulmonary tuberculosis reported in national registers may result from poor identification of the disease, as its symptoms are often atypical. Data from many countries show that 20–50% of cases of extrapulmonary tuberculosis are diagnosed post-mortem [8, 19, 20]. Extrapulmonary tuberculosis detection rates depend on the quality of medical services in a particular country. It was found that among patients born in South Asia and living in the United States, extrapulmonary tuberculosis was diagnosed in 50% of cases, whereas in the same population living in southern Asia, only in 21–28% of cases [17].

In Poland, extrapulmonary tuberculosis is diagnosed (at least according to registers) very rarely. In 2010, it accounted for only 6.8% of all reported cases of tuberculosis. This may be due to its poor detection rate, as found in some studies conducted in our country [21]. For this reason it is very useful to identify and publish a case of extrapulmonary tuberculosis in Polish journal. The case report published in the current issue of "Polish Pneumology and Allergology" by Michałowska and Błasińska is also quite unique [22]. It demonstrates a form of extrapulmonary TB that is rarely seen in Poland (bone tuberculosis represents only 0.8% of all TB cases). Moreover, location in the humerus is quite unusual. It is well known that bone tuberculosis mostly involves the hips and spine. The case report also notes a relatively poor effect of treatment. This raises the suspicion that the patient may be immunosuppressed in the course of one year of treatment with corticosteroids. Many studies show that this kind of treatment may have a substantial effect on activation of a dormant infection [23–25]. The higher the daily dose and cumulative dose of corticosteroids, the stronger the immunosuppressive effect of corticosteroids. In this case, the cumulative dose was probably high, taking into consideration the duration of treatment. One might question the need for such a treatment in the presented patient, and the authors have full right to suggest that in such cases, the diagnosis of sarcoidosis should be proved by histological examination.

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