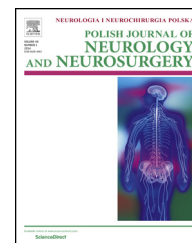


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Case report

A thoracic tuberculous spondylodiscitis after intravesical BCG immunotherapy of bladder cancer – Case report and literature review



Magda Dąbrowska^{a,*}, Tomasz Drabarek^b, Anna Muraszko-Klaudiel^c,
Jarosław Sławek^{a,d}

^aNeurology Department, St. Adalbert Hospital, Copernicus Podmiot Leczniczy Sp. z o.o., Gdańsk, Poland

^bUrology Department, St. Adalbert Hospital, Copernicus Podmiot Leczniczy Sp. z o.o., Gdańsk, Poland

^cRadiology Department, St. Adalbert Hospital, Copernicus Podmiot Leczniczy Sp. z o.o., Gdańsk, Poland

^dDepartment of Neurological and Psychiatric Nursing, Medical University of Gdańsk, Gdańsk, Poland

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ABSTRACT

We report a rare case of tuberculosis of the thoracic spine caused by *Mycobacterium bovis* infection as a complication of BCG (Bacillus Calmette-Guérin) intravesical immunotherapy, which is a well known and acknowledged treatment of superficial bladder cancers applied since 1976. Although this therapy is broadly used in urology and considered to be safe and well tolerated, one should be aware of the potential local and systemic side effects as in the case of our patient, who developed tuberculous spondylodiscitis after intravesical BCG therapy.

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1. Introduction

Low back pain is one of the main causes of medical consultations and the fifth most common reason of all physician visits in the USA [1]. The lifetime prevalence of spinal pain has been estimated at as high as 54% to 80% of population and its frequency raises with age [2]. This most common form of this pain is mainly associated with mechanical and degenerative changes of various spinal structures. Nevertheless, in the minority of cases the low back

pain may be a symptom of severe and even life-threatening disorders, one of them is spondylodiscitis – the inflammation of the vertebral bodies and intervertebral disk space, caused by various pathogens. Its incidence is estimated at 0.4–2.4/100,000 [3]. *Mycobacterium tuberculosis* is responsible for even 17–39% of all the cases of spondylodiscitis [4]. Musculoskeletal tuberculosis is generally rare in comparison to other forms of the disease, but among its cases the spine is the most frequently affected and accounts for 1–3% of all tuberculous infections [5].

Although in a significant percentage of tuberculous spondylodiscitis the primary infection is not evident, in the

* Corresponding author at: Neurology Department, St. Adalbert Hospital, Copernicus Podmiot Leczniczy Sp. z o.o., Al. Jana Pawła II 50, 80-462 Gdańsk, Poland. Tel.: +48 58 768 46 61.

E-mail address: magdakobierowska@o2.pl (M. Dąbrowska).

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majority of cases, it results from a haematogenous seeding of the mycobacterium from a latent pulmonary focus [6]. It can spread also by contiguous or lymphatic way [4]. Other possible, but very rare routes of spreading the bacteria in patients without primary infection, such as BCG osteomyelitis, are vaccinations (the risk is one in a million, with very infrequent spine involvement [7] or intravesical immunotherapy (the exact prevalence is unknown [8]).

BCG is an attenuated strain of *Mycobacterium bovis* and its use is broadly approved in medical practice both as a vaccine and anticancer agent [9]. Intravesical application of BCG immunotherapy is an established and effective treatment of bladder carcinomas and carcinomas in situ (CIS) [10]. It is considered to be a safe procedure, however sometimes serious complications may occur. We present a case of a 67-year-old patient with spondylodiscitis following BCG intravesical treatment as an example of a very rare, but severely dangerous side effect of this therapy.

2. Case report

A 67-year-old man was admitted to the neurological ward with the history of low back pain lasting about six months and a 5 kg weight loss. His past medical history included arterial hypertension and bladder cancer of papillary type. He underwent a few transurethral resections of tumor during 10 years after initial diagnosis and the procedure was repeated due to neoplasm recurrences. In order to prolong time between the subsequent relapses the patient finally received a full cycle of BCG immunotherapy (6 applications administered at weekly intervals) with 3 additional applications administered at monthly intervals. One month after the last intravesical installation he noticed the appearance of low back pain. An out-patient lumbar radiograph showed the scoliosis of thoracic and lumbar spine segments with no other significant pathologies. The cystoscopy examination performed 6 months after finishing the BCG immunotherapy did not show tumor. Despite using anti-inflammatory and analgesic medications prescribed by general practitioner the pain was debilitating and finally the patient was admitted to hospital. He denied any trauma, did not have fever, nor night sweats. His basic blood tests were normal, including white blood cells count, ESR (erythrocyte sedimentation rate) and CRP (C-reactive protein). He had no previous history of tuberculosis infection.

Physical examination on admission showed the following neurological symptoms: mild proximal weakness of lower limbs and slight hypoaesthesia below the L1 dermatome level, but he was still able to walk. CT (computed tomography) showed destruction of T10 and T11 vertebrae with fractures of terminal laminae, disk interspace involvement and the formation of the epidural abscess (Fig. 1). MRI (magnetic resonance imaging) scan of the spine confirmed the destruction of the T10–T11 vertebrae and their interspace (Fig. 2). Diagnosis of osteomyelitis or metastatic changes was suspected by radiologist.

In the subsequent CT scan of the whole trunk (thorax and abdomen) neither features of tuberculosis, nor of active neoplasm or metastatic process were found. The examination also did not reveal any other sources of inflammation. Based



Fig. 1 – A CT scan of the spine with degenerative process of Th10–11 vertebrae and intervertebral space.

on the presumptive diagnosis of discitis the neurosurgeons were requested to perform a biopsy of the involved spine segment. As they initially refused to perform this procedure, it resulted in a 10-day delay between the admission and surgical intervention. Due to uncertainty of the diagnosis empirical treatment was applied (ceftriaxone 2×1 g i.v. and lincomycin 3×600 mg i.v.), as recommended for the discitis.



Fig. 2 – T2-weighted MRI scan with the destructive process of Th10–11 vertebrae and intervertebral space, epidural abscess and spinal cord compression.

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