

TOPICAL REVIEW

Spondylodiscitis

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Abstract: Spondylodiscitis is the most common complication of sepsis or local infection, usually of an abscess. Very often it develops in patients immunocompromised by a malignant disease, infection, or during immunosuppression for organ transplantations etc. Presently, the basic diagnostic examinations to establish spondylodiscitis are the magnetic resonance (MRI) and biopsy, with microbiological tests. Lately, infection causes are increasingly proven by PCR method. In this paper we describe the causes of spondylodiscitis by reviewing the existing literature. The main causative organisms are staphylococci and *Mycobacterium tuberculosis*. The causes of spondylodiscitis are assigned to a large number of bacteria, fungi, zoonoses, which is to be taken into consideration in diagnostic treatment of patients (*Ref. 51*). Full Text (Free, PDF) www.bmj.sk. Key words: spondylodiscitis, pain, abscess, sepsis.

According to very scarce researches, the incidence of spondylodiscitis is 2.4/100,000 inhabitants. It increases with age, above 6/100,000 over the age of 70. The main unspecific symptoms are inflammatory spine pain, either associated with fever or not (1). Spondylodiscitis can be registered isolated, but it is significantly more often accompanied with other conditions such as infections, malignant diseases, collagenoses and other diseases of decreased immunity. Spondylodiscitis often occurs as a complication of sepsis, urinal tract infections, respiratory system infections (especially of lungs and pulmonary aspergillosis), diseases of the gastrointestinal tract and the small pelvis, even after tonsillectomy (2–7). Spondylodiscitis is often found as a complication of abscess of *m. psoas* and epidural abscess. Tendency to spondylodiscitis is related to diseases that damage the immune system: liver cirrhosis, following liver transplantation, Hodgkin's lymphoma, ulcerous colitis treated with glucocorticoids. Spondylodiscitis may be caused artificially by spinal puncture and piloidal sinus excision (8–11). The spondylodiscitis clinical image is dominated by dull pain. As the disease develops, raised temperature occurs, sometimes of septic character. The clinical image is completed by the laboratory diagnostics: raised erythrocyte sedimentation values, increased number of leukocytes, and deviations from normal differential blood count values, increased C-reactive protein values (4, 7–9, 12).

With atypical clinical images, useful can be somatosensory evoked potentials, x-rays of the spine and sometimes skeletal scintigraphy (12, 13). Diagnosis is performed with computed tomography (CT), magnetic resonance (MRI), then blood cul-

tures and discovevertebral biopsy (15–24). When required, modern diagnostic treatment can be completed with positron emission tomography/computerised tomography (PET/CT) (25). When necessary, in cases of suspected tuberculous or other causes of spondylodiscitis that can be proven by molecular techniques, the PCR method is to be performed (26). The subject matter of our interest are the commonest causes of spondylodiscitis.

Discussion

The main causative organisms are staphylococci (40 to 60 %), even though tuberculosis can be observed in 20 % (1). Pyogenic spondylodiscitis is a possible complication following surgeries such as laminectomy and microsurgical excision, but also *m. psoas* abscess, vertebral osteomyelitis etc (27, 28). *Staphylococcus aureus* and *Staphylococcus aureus* methicillin-resistant (MRSA) make a frequent cause, in as many as 40 to 60 % of spondylodiscitis patients. Spondylodiscitis can also be caused by *Staphylococcus hominis* and *Staphylococcus lugdunensis* (29, 30). This is of particular concern in immunocompromised persons, with infective conditions, malignant diseases and collagenoses. A particular problem in such patients is the resistance of *Staphylococcus aureus* and selection of the proper therapy, very often linezolid and vancomycin (1, 16, 31, 32). Tuberculous spondylodiscitis is a result of systemic tuberculosis, immunocompromised conditions, as well as in cases of inadequate application of BCG. The disease is treated by the usual triple therapy of tuberculous processes: rifampicine, pyrazinamid, isoniazid (33, 34, 13). Less common causes of spondylodiscitis are *Streptococcus pneumoniae*, resulting from pleuropneumonia (20). Described is a case of spondylodiscitis caused by *Streptococcus bovis* systemic infections (35). Described are cases of spondylodiscitis caused by *Veillonella* spp., as normal flora of gastrointestinal tract, triggered by endoscopy and colonoscopy (36). In endemic areas,

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brucellar spondylodiscitis are found. Brucellosis is treated with one of the following combinations: doxycycline + rifampicine, doxycycline+rifampicine+ceftriaxone, or, in some cases, with doxycycline+rifampicine+cotrimoxazol (37, 38). Spondylodiscitis caused by fungi, such as *Candida albicans* and species have been recorded in immunocompromised patients with systemic infections, patients subjected to chemotherapy, patients with Hodgkin's lymphoma etc. The disease is treated with intravenous amphotericin B for 2–3 weeks, followed by oral administration of fluconazole or voriconazole for 6–12 months (39–41). *Bacteroides fragilis* is a rare causative agent of spondylodiscitis, but it should be considered in patients with spondylodiscitis who have contiguous intraabdominal or pelvic infections or who had recent gastrointestinal procedures that may have led to *Bacteroides fragilis* bacteremia. Metronidazole was the most common antibiotic used for the treatment of patients, either as monotherapy or in combination with other antibiotics (42, 43). Infection by *Aspergillus fumigatus* is commonly found in immunocompromised patients, but rarely can affect immunocompetent patients. Presented is a case of infection by *aspergillus fumigatus* following an organ transplantation, but also in a case of a perfectly healthy person following an epidural steroid injection. In diagnostics of particular help are MRI of the spine and biopsy. Treatment is performed with voriconazole, but also with ciprofloxacin and clarithromycin (18, 44). Described are rare cases of infection with *Moraxella lacunata*, a Gram-negative bacillus of usually low pathogenicity for people. Treatment is with amoxicillin 12 g/day iv then per os, and ciprofloxacin 1,500 mg/day per os for 8 weeks (45). Described is a case of spondylodiscitis caused by *Serratia marcescens* in a cirrhotic patient who had several *Serratia* bacteremias after the placement of a transjugular intrahepatic portosystemic shunt device (46). Spondylodiscitis due to *Stenotrophomonas maltophilia* is described in only two cases of immunocompromised patients: renal transplant recipients with liver cirrhosis (47). *Neisseria subflava* is generally regarded as commensal flora of the oropharyngeal tract and usually non-pathogenic. However, in one case there is described epidural abscess resulting in spondylodiscitis caused by *Neisseria subflava* (48). Hamdad et al describe here the first case of *Nocardia nova* spondylodiscitis accompanied by a psoas abscess due to spreading from pulmonary nocardiosis (49). In some rare cases, spondylodiscitis is described accompanied with osteomyelitis caused by *Mycobacterium chelonae* that is treated with ciprofloxacin and clarithromycin (50). Q fever is a worldwide-occurring zoonosis caused by *Coxiella burnetii*. Described are cases of Q fever osteoarticular infections and paravertebral abscess, in some cases with particular complication with spondylodiscitis (51).

To conclude, spondylodiscitis occurs as a result of sepsis or a local infection. It is most commonly found in immunocompromised patients. Only occasionally the disease is related to improper manipulation with causative agents for therapeutic purposes. There are also registered cases of secondary spondylodiscitis caused by ubiquitous causes introduced into the blood stream and paravertebral tissues by diagnostic or therapeutic treatments.

The sort of the causative agent is to be proven. It is enabled by more recent diagnostic methods: MRI, biopsy, PCR. Adequate diagnostics enables proper medicamentous therapy.

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Received March 25, 2008.

Accepted June 15, 2008.