Cervical spondylodiscitis with spinal epidural abscess caused by *Aggregatibacter aphrophilus*

Leonella Pasqualini,1 Antonella Mencacci,2 Anna Maria Scarponi,1 Christian Leli,1 Gianluigi Fabbriciani,1 Laura Callarelli,1 Giuseppe Schillaci,1 Francesco Bistoni2 and Elmo Mannarino1

Correspondence
Leonella Pasqualini
lpasqua@unipg.it

1 Internal Medicine, Angiology and Arteriosclerosis Section, Department of Clinical and Experimental Medicine, University of Perugia Medical School, Hospital ‘Santa Maria della Misericordia’, Piazzale Menghini 1, I-06129 Perugia, Italy
2 Microbiology Section, Department of Experimental Medicine and Biochemical Sciences, University of Perugia, Perugia, Italy

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Spondylodiscitis caused by *Aggregatibacter aphrophilus*, formerly known as *Haemophilus paraphrophilus*, is an unusual condition and can be very difficult to diagnose. We report a case of cervical spondylodiscitis complicated by spinal epidural abscess in a 63-year-old woman, without underlying predisposing conditions. The source of infection was identified as a periodontal infection. The patient was successfully treated with systemic antibiotics.

**Case report**

A 63-year-old woman was admitted to the Internal Medicine Section, University of Perugia Medical School, in January 2007 because of cervical back pain of increasing intensity, and 7 days remittent fever (39 °C). She reported progressive weakness of the left upper arm with decreased strength in her grip. The family physician had prescribed 500 mg acetaminophen orally twice a day, 75 mg diclofenac intramuscularly twice a day and 250 mg clarithromycin orally twice a day with no improvement of clinical picture. The patient had a history of mild chronic cervical back pain for several years, and a previous radiograph of the cervical spine showed chronic degenerative changes. The patient had undergone tooth extraction 3 months previously.

At the hospital admission, she was febrile (39 °C), and physical examination showed resisted neck flexion and weakness of the distal left upper extremity; cardiac auscultation demonstrated an apical murmur, 2/6 intensity. Laboratory tests showed leukocytosis (13,900 leukocytes mm−3 with 90% neutrophils) and elevation of erythrocyte sedimentation rate (77 mm h−1) and C-reactive protein levels (116 mg l−1). After cerebral computed tomography, the patient underwent a lumbar puncture. Cerebrospinal fluid pressure was normal, and biochemical analysis revealed increased protein levels (187 mg dl−1), with normal glucose and no leukocytes. A magnetic resonance imaging (MRI) scan of the cervical spine demonstrated an abnormal signal intensity at the level of C6–C7 vertebral bodies and at the intersomatic disc. The pre-contrast sequences also demonstrated signal alterations involving the perivertebral soft tissues from C4 to T1. Gadolinium injection showed pathological enhancement of meninges from C4 to T1, and an anterior-paramedian epidural abscess at the level of the C6–C7 intersomatic disc, not compressing the spinal cord (Fig. 1). An initial empiric antimicrobial therapy, with 400 mg teicoplanin endovenously once a day and 500 mg imipenem–cilastatin endovenously three times a day, was started; Schanz collar was used for cervical spine immobilization. Electromyography showed severe acute axonal injury at the C7–C8–T1 levels. Neurosurgical evaluation excluded the need for decompressive laminectomy or debridement of infected tissues.

Cultures of the cerebrospinal fluid were negative, while blood samples (two sets from different vein punctures), collected immediately on admission in BACTEC Plus aerobic and anaerobic bottles (Becton Dickinson), flagged positive (aerobic bottles) after 6 days of incubation for small Gram-negative coccobacilli. After subculturing, small colonies were noted on chocolate agar after 48 h of incubation at 37 °C in the presence of 5% CO2. No growth was observed on sheep blood agar or on MacConkey agar. The organism was positive for oxidase, and negative for catalase and urease reactions. Tests for X and V growth factors were done with factor-containing paper discs (Becton Dickinson) placed on inoculated trypticase soy agar. The organism was factor V- but not factor X-dependent. Porphyrin test was used to confirm X factor-independent growth of the organism (Kilian, 2003). The isolate was identified as *Haemophilus paraphrophilus* by carbohydrate utilization and other biochemical reactions (API system NH; bioMérieux), according to the Albritton...
criteria (Albritton, 1982). This organism has been recently reclassified as Aggregatibacter aphrophilus (Norskov-Lauritsen & Kilian, 2006). The isolate was negative for β-lactamase and susceptible to ampicillin, cefotaxime, ceftiraxone, imipenem, ciprofloxacin, chloramphenicol and trimethoprim–sulfamethoxazole. After isolation of the infectious agent, we continued therapy with imipenem–cilastatin at the same dosage indicated above. Additional studies were performed to determine any possible sources of bacteraemia. Radiographs of the chest and paranasal sinuses, a transthoracic echocardiogram and an abdominal ultrasound scan revealed no pathological findings. We also performed a dental X-ray that showed apical periodontal disease of the 27th tooth.

After 7 days of antibiotic treatment the fever completely disappeared and back pain was greatly reduced. The response to treatment was monitored with serial MRI, and measurement of erythrocyte sedimentation rate and C-reactive protein levels. After 12 weeks the erythrocyte sedimentation rate and C-reactive protein levels were normalized, the MRI scan showed significant improvement (Fig. 2), and antibiotic treatment with parenteral imipenem–cilastatin was stopped.

Discussion

We performed a MEDLINE search of the literature using the key words H. paraphrophilus cross-referenced with spondylodiscitis, discitis, spondylitis, vertebral osteomyelitis and epidural abscess. H. paraphrophilus, first described by Zinnemann in 1968 (Zinnemann et al., 1968), has been recently reclassified as Aggregatibacter aphrophilus (Norskov-Lauritsen & Kilian, 2006). It is an oral fastidious Gram-negative commensal bacterium with low pathogenicity (Liljemark et al., 1984). Together with the other members of HACEK group (Haemophilus aphrophilus, reclassified as Aggregatibacter aphrophilus (Norskov-Lauritsen & Kilian, 2006); Actinobacillus actinomycetemcomitans, reclassified as Aggregatibacter actinomycetemcomitans (Norskov-Lauritsen & Kilian, 2006); Cardiobacterium hominis; Eikenella corrodens; Kingella spp.), it is an uncommon cause of human disease, but has been occasionally implicated in subacute endocarditis, osteomyelitis, brain and liver abscesses, and fatal pneumonitis (Le Gangneux et al., 1993; Watkin et al., 2003; Rabaud et al., 1995; Jensen & Hojbjerg, 1985, Howard, 1981). Only 3 cases of spondylodiscitis and spinal abscess have been reported to date (Samuel et al., 1997; Scerpella et al., 1994; Wilson et al., 1994), although the literature showed 15 cases of vertebral infection caused by H. aphrophilus (Colson et al., 2001). The nature of this bacterium means that, in clinical specimens, it may remain undetected unless appropriate microbiological methods are used. In our case, blood culture bottles flagged positive after 6 days of incubation. This underlines that routine incubation of blood cultures for 5 days may not be adequate for recovering fastidious bacteria such as HACEK group members, for which it is recommended that cultures be held for 14 days.

Identification of H. paraphrophilus and its differentiation from H. aphrophilus or from Aggregatibacter actinomyce-


**References**


