Acta orthop. scand. 46, 67–70, 1975

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DIPHTHEROID INFECTION OF THE CERVICAL SPINE

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Accepted 15.x.74

The non-sporing, non-motile, Gram-positive bacilli which form part of the normal flora of human skin and mucous membranes are collectively referred to as diphtheroids. These organisms are frequently found to contaminate clinical specimens, such as blood cultures, but it is only relatively recently that pathogenic infections in man due to diphtheroid organisms have been reported. For example, Johnson & Kaye (1970) have reported cases of bacterial endocarditis, meningitis, adenitis and hepatitis.

Reports of diphtheroid organisms causing infections in bones or joints are rare. Procek & Mlaya (1961) reported a diphtheroid osteomyelitis following a fracture, and Waitzkeh (1969) described a case of bone marrow infection due to *Corynebacterium acne,* which was considered to be unique. Growth of diphtheroid organisms from rheumatoid joints has been reported (Duthie et al. 1967), but their role as pathogens has not been established. The purpose of this communication is to report a case of spinal osteomyelitis due to a diphtheroid organism, since this does not appear to have been described previously.

CASE REPORT

A 75-year-old author presented with one month's history of pain in his neck, which had gradually worsened and was beginning to radiate to his upper limbs and to restrict movement in his cervical spine.

Examination

The patient was afebrile and abnormal signs were restricted to his neck. Tenderness was elicited over the lower cervical spine, the movements of which were slightly restricted by pain. There were no enlarged cervical glands and no abnormal neurological signs.

Figure 1. Initial lateral X-ray of the cervical spine showing narrowing of the C. 5/6 disc space with bony destruction of both adjacent vertebrae and a soft tissue mass anteriorly.

Investigations

Haemoglobin was 11.8 g/100 ml, total white cell count 11,900/mm^3, and E.S.R. 78 mm (Westergren). The following serological tests were negative or within normal limits: Wassermann, Gonococcal complement fixation test, Widal, agglutination to Brucella abortus, antistaphylococcal haemolysin and antistreptococcal O titres, and the Latex slide test. The Mantoux reaction was negative. Blood and urine cultures were sterile and no pathogens were isolated from a throat swab.

X-rays of the cervical spine showed marked narrowing of C. 5/6 disc space with some destruction of both adjacent vertebral bodies. A soft tissue mass was observed anteriorly (Figure 1). Bone scan showed increased uptake in the lower cervical spine.

Progress

The patient was treated with a cervical collar, but developed a fever of 38.2° C. The lesion in his neck was then aspirated under radiological control. Altered blood was obtained from the lesion and this was subjected to bacteriological examination.

Bacteriology

The centrifuged deposit showed scanty clumps of filamentous, branching, Gram-positive rods. The deposit was cultured on horse blood agar plates, both aerobically and anaerobically with added CO_2, and in cooked meat medium. After seven days

Figure 2. After three months treatment, the destroyed bone is being reformed.

incubation a scanty pure growth of tiny greyish-white colonies was just visible on the anaerobic plate. The organism was a pleomorphic, Gram-positive rod, non-motile non-sporing and non-acid fast. A positive Catalase reaction ruled out *Actinomyces sp.* The 'diphtheroid' grew more rapidly on repeated subculture, but remained an obligate anaerobe. Its identity was finally established by gas chromatographic examination as a species of *Proprionbacterium*, producing propionic and acetic acids from glucose. The organism was sensitive to penicillin.

Treatment

A Minerva plaster was applied and therapy with two grams daily of benzyl penicillin was started. The patient's condition rapidly improved. After six weeks the plaster was removed and a further X-ray (Figure 2) showed evidence of healing. His E.S.R. was now 10 mm/hour. Penicillin was continued for a total of 15 weeks and after discontinuing therapy there was no recurrence of symptoms or regression of radiological appearances.

One year after presentation the patient was symptom free and had a normal range of movement in his cervical spine. There was no radiological evidence of persistent infection and the affected vertebrae appeared to be fusing.

DISCUSSION

The diphtheroid organism isolated in this case was thought unlikely to be a commensal, since the organisms seen in the aspirate were too

numerous to have been transfixed during skin entry; no other skin commensals such as Staphylococcus albus were seen in the aspirate or isolated on culture; no other bacterial pathogen was isolated; and the infective process responded to penicillin, to which the diphtheroid was sensitive. It therefore, seems that this case provides another example of a serious infection being caused by an organism which is not usually regarded as pathogenic.

SUMMARY

A unique case in which cervical osteomyelitis was caused by a diphtheroid is reported and the previously recorded clinical infections due to similar organisms are briefly reviewed.

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Key words: bacteria; diphtheroid; osteomyelitis; cervical spine; infection

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