PESEOTUBERCULOUS ADENITIS CAUSED BY
CORYNEBACTERIUM PSEUDOTUBERCULOSIS

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Although Corynebacterium pseudotuberculosis (the Preisz-Nocard bacillus, syn. C. ovis) was first described nearly a century ago, there have been only six descriptions of the illness that it produces in man. The present communication describes the course of the infection, treatment, histological appearance of the lesion and properties of the organism in a case of axillary adenitis occurring in a man previously employed in an abattoir.

CLINICAL HISTORY

A 21-year-old man at Bunbury, Western Australia complained of an enlarged and painful left axillary node; no focus of infection was found. Two years before his current employment at a wheat silo, he had been employed at an abattoir for 3 years. The node was removed but the patient required treatment for 3 months with cloxacillin before the surgical wound sinus healed.

HISTOLOGICAL APPEARANCE

The excised node measured 4.5 x 4.0 x 3.5 cm and weighed 26.0 g. On section, a large central area of necrosis was found. Microscopic examination showed that the perinodal tissues were inflamed, oedematous and infiltrated with polymorphonuclear leucocytes. The necrotic area was surrounded by palisaded endothelial cells containing lymphocytes and multinucleate giant cells, the appearance being consistent with a tuberculoid granuloma (fig. 1). The methenamine silver stain revealed large numbers of bacilli (fig. 2).

MICROBIOLOGICAL FINDINGS

Cultures on Lowenstein-Jensen medium incubated at 30°C produced a growth of non-motile Gram-positive bacilli showing metachromatic granules when stained by Albert's method. The organism produced haemolysis on horse-blood agar; it grew on Hoyle's tellurite agar but not on MacConkey's agar. Urease was demonstrated on the medium of Christensen (1946), and arginine dihydrolase by the method of Brooks and Sodeman (1974). Nitrate was reduced to nitrite and there was slow liquefaction of gelatin, but neither hydrogen sulphide nor indole was produced. Acid was not produced from any carbohydrate when the organism was grown in peptone water; cultures in Hiss's serum base produced acid from glucose, maltose, and starch. When grown in the base of Hugh and Leifson (1953) the organism produced acid from glucose, fructose, ribose, maltose, cellulbiose and sorbose. Acid was not produced from the pentoses arabinose, rhamnose or xylose; the monosaccharides galactose or mannose; the disaccharides lactose, melibiose, sucrose, or trehalose; the trisaccharides melezitose or raffinose; the polysaccharides dextrin, glycogen, starch or inulin; the glycosides aesculin, amygdalin or salicin; or from the alcohols adonitol, dulcitol, erythritol, glycerol, mannitol, sorbitol or inositol. The organism was found to be sensitive to penicillin, ampicillin, cloxacillin and erythromycin.

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DISCUSSION

The first recorded case of human infection with *Corynebacterium pseudotuberculosis* was described by Lopez, Wong and Quesada (1966) in the Panama Canal Zone. The patient, a 37-year-old Mestizo Indian hunter, had an enlarged right inguinal node; the condition was thought to be lymphogranuloma venereum and he received tetracycline for 3 weeks. When the node was subsequently excised the characteristic histological appearance was seen and the organism grown. When seen 2 weeks after surgery he was completely well. The strain described by Lopez *et al.* produced acid from glucose, fructose, galactose, sucrose, mannose, maltose, dextrin and xylose. It produced hydrogen sulphide but failed to reduce nitrate to nitrite; the urease reaction was not recorded.

In the first Australian case, that of Battey *et al.* (1968) in Queensland, the patient was a 23-year-old butcher with an enlarged left axillary gland. After excision, discharge persisted for 8 weeks. In this instance the organism did not grow on primary cultures but was isolated after guinea-pig inoculation. It produced acid from glucose, fructose, mannose, glycerol, galactose and maltose.

The second Australian case occurred in the same year in Victoria and was described by Hamilton *et al.* (1968). The patient was a sheep shearer with an enlarged gland in his right axilla. After 3 months he had a discharging sinus from which *C. pseudotuberculosis* was grown; he was treated with penicillin for 7 months. The organism produced acid from glucose only; it produced urease but did not reduce nitrate to nitrite.

In 1974 Blackwell, Smith and Joyce described a further 3 cases, on this occasion from Western Australia. In the first patient, who worked on a sheep station, both left and right axillary nodes were affected; these were excised and the wounds healed promptly. In the second case the man owned sheep; the left inguinal gland had been enlarged for 7 months. After removal the wound healed promptly but induration persisted for many months. In these two cases the diagnosis was made both histologically and by culturing the organism. Each of the two strains produced acid from glucose and maltose, and one also fermented xylose and trehalose; both produced urease, but nitrate was not reduced to nitrite. In the third case, a woman who came regularly into contact with sheep, a cervical lymph node had been enlarged for 2 months. The diagnosis was made on histological examination of the excised node which contained the typical tuberculoid granuloma and also clusters of diphtheroid organisms. The post-operative swelling took several months to subside.

These histories indicate that the lesion may have either an acute or an insidious onset and that healing may be prompt after excision, or the lesion may regress over many months without surgery.

The histological picture of a tuberculoid granuloma due to *Corynebacterium pseudotuberculosis* is likely to be confused only with cat-scratch disease; however the presence of diphtheroid organisms in such a tuberculoid granuloma is suggestive of infection by *C. pseudotuberculosis*. The organism is usually identified readily; it regularly produces acid from glucose and maltose, urease production is fairly constant and nitrate reduction frequent.

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REFERENCES


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Fig. 1.—Tuberculoid granuloma of axillary lymph node caused by Corynebacterium pseudotuberculosis. × 125.

Fig. 2.—C. pseudotuberculosis in a section of infected lymph node. Methenamine silver stain. × 1000.

(facing page 148)
Christensen, W. B. 1946. Urea decomposition as a means of differentiating Proteus and Paracolon cultures from each other and from Salmonella and Shigella types. J. Bact., 52, 461.

