

NEISSERIA PHARYNGIS BACTERIAEMIA IN A PATIENT WITH SUBACUTE BACTERIAL ENDOCARDITIS

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In September, 1955, a young woman of 21 was admitted to the National Heart Hospital with a clinical diagnosis of subacute bacterial endocarditis, involving the mitral valve. The illness developed a few weeks after a gum infection and the extraction of four teeth, in April.

She had several attacks of tonsillitis before the age of 5 years, and at 7 heart disease was first noted. At 16, in Ireland, she received penicillin for six weeks for bacterial endocarditis, from which she recovered.

Investigations

There was moderate hypochromic anaemia (11 g. Hb/100 ml.) and a white cell count of 9,400 (neutrophils 70, eosinophils 0.7, lymphocytes 24.7, monocytes 4.6). Urine examination showed a trace of protein only. Blood cultures were made on the first three days after admission, five in glucose-broth and five in Brewer's medium. Within seven days' incubation at 37° C., nine of the 10 cultures yielded a pure growth of a Gram-negative diplococcus which was identified as a member of the *Neisseria pharyngis* group. On blood agar, the colonies, after 24 hours' incubation at 37° C., were minute, shiny domes about 0.2 mm. in diameter, with a slight greenish tinge, but no haemolysis. A smooth saline suspension was readily made, and this showed rapid slide agglutination with the patient's serum. Growth of subcultures was best on blood agar in a CO₂ tin, but scanty growth occurred on nutrient agar at room temperature within a week. With successive subcultures on blood agar, growth became more plentiful, and the organism showed an increasing tendency to stain Gram-positive, as though two organisms were present, even in the tiniest colony.

Treatment

The organism proved sensitive to penicillin, and to other antibiotics, to at least the same degree as the Oxford staphylococcus, and a six-week course of crystalline penicillin injections was therefore instituted, beginning with ½ million units six-hourly. As further embolic skin lesions appeared and two teeth required removal, the dosage was doubled and probenecid ("benemid"), 0.5 g. six-hourly, was given to augment the penicillin

levels. Eight days later a penicillin-sensitivity reaction developed—fever, diffuse irritating maculo-papular rash over the trunk, and eosinophilia (45%). The penicillin and probenecid were discontinued, and after three days the reaction subsided. Penicillin was then begun again, and the dosage raised to 1½ million units three-hourly to provide for the extraction of two more teeth, but four days later a second reaction occurred. This subsided with lowering of the dose to ½ million units three-hourly and the administration of 50 mg. diphenhydramine hydrochloride ("benadryl") three times daily.

The subsequent course was uneventful, and the patient was discharged on the 63rd day, having received a total of 176 million units of penicillin.

Discussion

Eleven examples of bacterial endocarditis attributed to Gram-negative diplococci, other than meningococcus and gonococcus, have been reported, the first in 1918 by Schultz. In previous cases the causative organism has been classified as *Neisseria pharyngis* group (Goldstein, 1934; Shiling, 1939), *N. pharyngis sicca* (Schultz, 1918; Graef, Chapelle, and Vance, 1932; Weed, Clapper, and Myers, 1943), *N. flava* (Connaughton and Rountree, 1939; Matlage, Harrison, and Greene, 1950), *N. perflava* (Major and Johnson, 1945), *N. fluorescens* (Satta, 1945), or as an unclassified Gram-negative coccus (Shiling, 1939; Dammin, 1941). In several of these there was necropsy confirmation of heart infection, the mitral valve usually being involved. Although final proof is lacking, it is reasonably certain, on clinical and bacteriological grounds, that the endocarditis in the present case was due to *Neisseria pharyngis* infection of the mitral valve, and that the source of infection was septic teeth and gums. In the days before penicillin was generally available, recovery was reported after treatment with heparin and sulphapyridine (Weed *et al.*, 1943) and with sulphamerazine (Major and Johnson, 1945); in the latter case, the organism (*N. perflava*) was Gram-positive on primary isolation

and only became Gram-negative after two months of subculture in contrast to the behaviour of the organism in the present case.

The hypersensitivity to penicillin exhibited by the patient was probably due to sensitization by the treatment she had at the age of 16, the present reactions being precipitated when the dosage was raised, and, in the first episode, augmented by probenecid. This first reaction was preceded by an eosinophilia (5%) nearly two weeks before the symptoms appeared.

When last seen, in late February, 1956, there were no manifestations of an active endocarditis and the eosinophilia had subsided.

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