

Yersinia enterocolitica in the Western Cape*

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SUMMARY

Yersinia enterocolitica, serotype 3, phage type 9a, has been isolated for the first time in the Western Cape.

Sera from 59 abattoir workers were investigated for the presence of O and H agglutinins. These were present in one sample, suggesting a past infection.

Sera from 115 Nama-speaking adults of the Kuboes area (Namaqualand), submitted to the same technique, gave 2 positive reactions. Eleven lepers with arthritis were serologically negative.

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A Pasteurella-like bacterium for many years was suspected as a cause of enteritis. This organism was shown by Wouters,¹ Mollaret,² Graux and Mollaret,³ Winblad⁴ and others, to be the causal agent of cases of enteritis in Belgium, the Netherlands and Scandinavia. In 1964 it was correctly named *Yersinia enterocolitica* by Frederiksen.⁵

In South Africa the organism has been isolated from man and pigs in Johannesburg and the Orange Free State, by Rabson and Koornhof.⁵ They grew 18 strains, mostly from stools of patients, 11 of whom showed symptoms of diarrhoea and vomiting. Two, however, were isolated from asymptomatic food-handlers.

MATERIALS AND METHODS

In the 2 cases reported here, the organisms were isolated from stools of Coloured children suffering from diar-

rhoea, and admitted to the paediatric wards of the Karl Bremer Hospital, Bellville, CP.

Faeces specimens were planted out on MacConkey medium (Oxoid), SS agar (Difco) and selenite cystine broth (Difco), to which novobiocin (40 mg per litre) was added. This was used as an enrichment medium.

The first isolate was obtained from a subculture of the enrichment medium after 5 days' incubation at 37°C. The second isolation was made directly from inoculation of MacConkey's medium after 48 hours' incubation at 37°C. After isolation cultures were tested for motility at 22°C and 37°C, for biochemical reactions, antibiograms, and for agglutinability by self-prepared anti-*Yersinia* rabbit sera. These were prepared from *Yersinia* strains supplied by Professor S. Winblad.

BACTERIOLOGY

The two strains of *Yersinia enterocolitica* showed the typical morphological and cultural characteristics, including motility at 22°C, but not at 37°C. Glucose, sucrose, and mannite were fermented; urease and catalase were produced.

The organisms were methyl red-positive, and reduced nitrates.

They were sensitive to the following drugs as tested, using 6 mm sensitivity discs: ampicillin, streptomycin, chloramphenicol, tetracyclines, erythromycin, kanamycin, neomycin, furazolidone, cephalothin, and trimethoprim/sulphamethoxazole, but resistant to novobiocin and penicillin G.

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Both strains were sent to Professor Winblad, who reported that they were typical *Yersinia enterocolitica* and belonged to serotype 3. Professor Mollaret of Paris reported the phage type as 9a.

SEROLOGICAL INVESTIGATIONS

Sera from the second patient and the mother were tested for the presence of *Yersinia* agglutinins. The patient's serum agglutinated both strains isolated, and 2 typical *Yersinia* strains (obtained from Professor S. Winblad) to a titre of 1 in 2 560, using an H-O suspension prepared by Winblad's technique.⁶ The mother's serum failed to agglutinate the suspensions at a serum dilution of 1 in 20.

In view of the reported connection of *Yersinia* infection with pigs, serum was obtained from 59 abattoir workers, including 2 veterinarians. Serum from one veterinarian agglutinated a *Yersinia* O suspension at a dilution of 1 in 40, and an H suspension at a dilution of 1 in 80. None of the other 58 sera showed the presence of *Yersinia* O or H agglutinins at a dilution of 1 in 4. It was therefore concluded that the O and H agglutinin titres in this one individual indicated a past infection. Serum from 11 lepers showing symptoms of arthritis were also tested for the presence of *Yersinia* antibodies. None of these sera showed the presence of agglutinins at a dilution of 1 in 4.

Sera from 2 of 115 adult, apparently healthy, Nama-speaking Coloured inhabitants from Kuboes (Namaqualand) showed *Yersinia* O and H agglutinins at a dilution of 1 in 80. This suggested a previous infection.

DISCUSSION

Yersinia enterocolitica has been reported mainly as a causal agent of gastro-enteritis, and has been especially implicated in cases with appendi-coecal symptoms. Apart from this type of infection, the organism has been found in cases of erythema nodosum, arthritis, myocarditis and other conditions. The subject has been thoroughly reviewed by Rabson and Koornhof.⁵ The 2 isolations reported here, were from cases of enteritis.

It is of interest to note that in one of our cases *Salmonella johannesburg* was isolated earlier this year. This is

in line with the findings of Makulu *et al.*⁷ and Wouters,¹ who isolated *Salmonellae* at the same time as *Yersinia*. Both our *Yersinia* strains were sensitive to ampicillin, streptomycin, chloramphenicol, tetracycline, erythromycin, kanamycin, neomycin, furazolidone, gentamicin, cephalosporin and trimethoprim/sulphamethoxazole, but resistant to novobiocin 30 µg when tested with the disc technique. As was found by other workers, both strains were resistant to penicillin G 4,0 µg.

One hundred and fifteen apparently healthy Coloured inhabitants of the Kuboes district in Namaqualand, 59 abattoir workers of the Western Cape, and 11 leprosy patients, were examined for *Yersinia* antibodies. These were found to be present in 1 of the abattoir workers, in 1 veterinarian, and in 2 adults from Kuboes, suggesting a past infection.

Our findings, along with those of Rabson and Koornhof,⁵ show that, although not common, *Yersinia enterocolitica* infection is probably fairly widespread throughout Southern Africa. Its presence in cases of acute gastro-enteritis, erythema nodosum, arthritis, osteitis and abscess formation should be considered. According to the literature, symptomless carriers exist and should be followed up.

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