Bacteriological findings in cultures of clinical material from Bartholin’s abscess

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SUMMARY Purulent exudate from 28 cases of Bartholin’s abscess were examined for aerobic, anaerobic, and microaerophilic bacteria. Three cases gave no bacterial growth, five cases grew facultative bacteria only, and a further three grew a mixture of facultative and anaerobic bacteria. One case gave a pure growth of a microaerophilic streptococcus. Anaerobic bacteria were the only isolates in 16 cases and Bacteroides species were the most common organisms isolated; they were present as 62.5% of the total anaerobes cultured and accounted for 45.4% of the total bacteria cultured. Escherichia coli was the most common of the facultative organisms, accounting for 18% of the total bacteria. Most infections seemed to be caused by a single organism, anaerobic types predominating.

The bacteriology of Bartholin’s abscess has received little attention in the literature, mainly because this condition rarely presents as a life-threatening infection involving complex therapeutic considerations.

One published study has revealed the importance of careful bacteriological investigation of material aspirated from these abscesses to find their true bacteriological aetiology (Swenson, 1974).

This paper presents the bacteriological findings when purulent exudate from a series of Bartholin’s abscesses was cultured for aerobic, anaerobic, and microaerophilic bacteria (including the gonococcus).

Material and methods

Purulent material from a Bartholin’s abscess was collected onto serum-coated cotton-wool swabs which were placed into screw-capped tubes containing an 8 cm column of Cary Blair transport medium (Cary and Blair, 1964). The swabs were sent to the laboratory through the normal hospital transport system.

CULTURE OF SWABS
Swabs were cultured onto columba agar containing 5% horse blood (CBA) and MacConkey agar both for aerobic incubation. Cultures were made on CBA and brucella agar containing 5% horse blood, 0.5 μg/ml menadione, and 75 μg/ml kanamycin (KBA) for anaerobic incubation. Cultures were also made onto a selective GC medium for detection of Neisseria gonorrhoeae. All media were obtained as prepoured plates from London Analytical and Bacteriological Media Ltd, Salford, Lancs.

INOCULATION OF PLATES
Anaerobic cultures were incubated in anaerobic jars fitted with a modified catalyst sachet (Baldwin, 1975) and set up in the manner recommended by Watt and Collee (1974) using a gas mixture of 90% hydrogen and 10% carbon dioxide. Plates were examined at 24 and 48 hours and finally after five days’ anaerobic incubation.

Aerobic plates were examined after 24 and 48 hours. The selective GC plates were incubated in an atmosphere of air plus 10% carbon dioxide using a CO2 incubator and examined at 24 and 48 hours.

IDENTIFICATION OF ORGANISMS
Aerobic and anaerobic organisms were identified to genus level, and to species level wherever possible. Aerobic and facultative organisms were identified using conventional tests as listed by Cowan (1974). Anaerobic isolates were identified using microscopical characteristics (gram stain and phase-contrast), antibiogram patterns, and biochemical characteristics. A fuller description of these methods has been published previously (Wren, 1977; Wren et al., 1977).
Results

Twenty-eight cases of Bartholin’s abscess were cultured. Three samples failed to yield any bacterial growth. Of the remaining 25 samples, five contained facultative bacteria only. Nineteen samples grew anaerobic bacteria; in three they were mixed with facultative organisms and were the only isolates in the remaining 16 samples. Anaerobes were cultured in pure growth in 13 of these 16 samples. One sample grew a microaerophilic streptococcus in pure culture (Table 1).

A total of 33 bacteria were cultured, consisting of 8 facultative bacteria, one microaerophile, and 24 anaerobes. These organisms are listed in Table 2.

The most common facultative organism was E. coli (six isolates), four being found in pure culture. The two other strains were a group B streptococcus and an isolate of Haemophilus influenzae (also in pure culture). The three samples yielding a facultative-anaerobe mixture grew a total of three facultative organisms and four anaerobes.

The most common anaerobe cultured was Bacteroides fragilis (eight isolates), four strains being found in pure culture. This organism accounted for one-third of the anaerobic isolates. In all, Bacteroides species accounted for 62.5% of the anaerobes (the remainder being anaerobic cocci) and accounted for 45.4% of the total bacteria cultured. Of the total cultivated bacteria, 72.7% were anaerobes. N. gonorrhoeae was not cultured from any of the samples.

Discussion

Many studies in the literature have suggested that infections associated with the female genital tract commonly involve anaerobic bacteria. This study shows that localised infections presenting as Bartholin’s abscess are no exception.

Since anaerobic bacteria form a considerable part of the normal vaginal microflora their involvement in such localised infections is hardly surprising. What is of interest, however, is that from such a mixed indigenous population only one organism seems to be involved in the infection since in 19 of the abscesses in this study a heavy pure growth of a single organism was obtained on culture. This evidence, together with the fact that three samples were sterile, seems to suggest that these cultures do not reflect contamination of the clinical material with the heavy mixed bacterial population found in the normal vaginal flora.

In this study E. coli was found to be the most common of the facultative species together with two other species (a group B streptococcus and H. influenzae), revealing that both common and uncommon organisms may be found in this condition. Only one sample grew a microaerophilic streptococcus, a very common organism in the vaginal microflora. No samples grew N. gonorrhoeae despite cultural conditions known to be satisfactory for this organism. In contrast, however, N. gonorrhoeae was isolated in 3 of 51 samples in the study by Parker and Jones (1966).

Three samples in the present study were sterile after five days’ incubation. Stokes (1955; 1974) has suggested that Mycoplasma species may be the causative agents of Bartholin’s abscesses, and it is possible that these organisms may have been responsible for the three ‘sterile’ samples here. The use of specific media for these organisms was not included in the culture regime, but Mycoplasma species have been isolated on Columbia blood agar previously in this laboratory so that presumably if present they would have appeared on the anaerobic blood agar plates.

Anaerobic bacteria were found in all but six samples showing a bacterial growth and were clearly the predominant organisms in this study. B. fragilis, a well established human pathogen, was cultured as the most frequent anaerobe. Bacteroides species were also the most frequent of the bacterial species cultured. This finding is at variance with that of Parker and Jones (1966), who found anaerobic cocci.


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