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Original Research Article

Recurrent Furunculosis: incidence of anaerobes and fungi

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ABSTRACT

Background: The occurrence of recurrent furunculosis is common. However, the only cause for the infection reported till this date was aerobes and prior reported series never identified anaerobes and fungi as causative organisms.
Methods: A retrospective study of 1760 patients with furunculosis was done to determine the incidence of recurrent furunculosis and its anaerobic and fungal etiologies.
Results: Between January 2006 and Nov 2016 we identified 41.76% case of recurrent furunculosis. Within this group aerobes were isolated in 29.53% cases, anaerobes were in 53.60% and fungus was in 16.87%. The genus *Fusobacterium neucleatum* (28.7%) predominates among anaerobes, while *Candida parapsilosis* (27.41%) predominates among fungal etiologies.
Conclusions: This study emphasizes that anaerobes and fungi have their own importance in the cases of recurrent furunculosis.

Keywords: Anaerobes, Fungus, Furunculosis, Recurrent

INTRODUCTION

Furunculosis is a skin problem which can be recurrent and often spreads to family members either directly by skin contact or indirectly.[1] Recurrent furunculosis (RF) is generally defined as three or more attacks within a 12-month period.[2] Colonization of *S. aureus* in the anterior nares plays a definite role in the etiology of chronic or recurrent furunculosis. Besides the nares, colonization also occurs in warm, moist skin folds such as behind ears, under pendulous breasts, and in the groin. Bacteria other than *S. aureus* may also be pathogenic, especially for furuncles in the vulvovaginal and perirectal area, and on the buttocks.[3] Especially, enteric species such as *Enterobacteriaceae* and *Enterococci* are often present at these sites.[1] The aim of this retrospective study is to analyze the incidence of anaerobes and fungal etiologies in cases of recurrent furunculosis.

METHODS

The study included 1760 clinically diagnosed cases of furunculosis received from different skin clinics of Allahabad, India. In all the cases data related to the age, sex, duration of the lesions, occupation, personal, habits etc were noted. After a detailed clinical examination, the physical features of the lesions were recorded. Care was particularly taken to record the presence of superficial bacterial and mycotic infections on the other parts of the body. Cultures were routinely incubated at 25^0 and 37^0c and examined daily for up to 4 weeks. The identification of individual bacteria and fungi was done by Vitek-2 (Biomeurix, France). Two successive cultures were performed to establish the colonization of the pathogen because successive sampling rarely demonstrates the same contaminant.[4-5]

RESULTS

During the period between Jan 2006 and Nov 2016, 1760 patients with furunculosis were registered in various skin OPDs of Allahabad. The demographic and base line data of aforesaid patients were described as follows. Out of the 735 cases, the mean age of patients was 54.8±2.1 years with males being about 62% and females about 38%. The mean duration of the follow up was 23.7 months. Out of these 1760 patients, 1025 (58.24%) developed non-recurrent furunculosis and the rest 735 (41.76%) developed RF. Out of the 735 cases, 217 (29.52%) developed aerobic RF, 394 (53.60%) developed anaerobic RF and 124 (16.87%) developed fungal RF (Figure 1). The etiologic spectrum of anaerobes and fungus is illustrated (Figure 2 and 3).

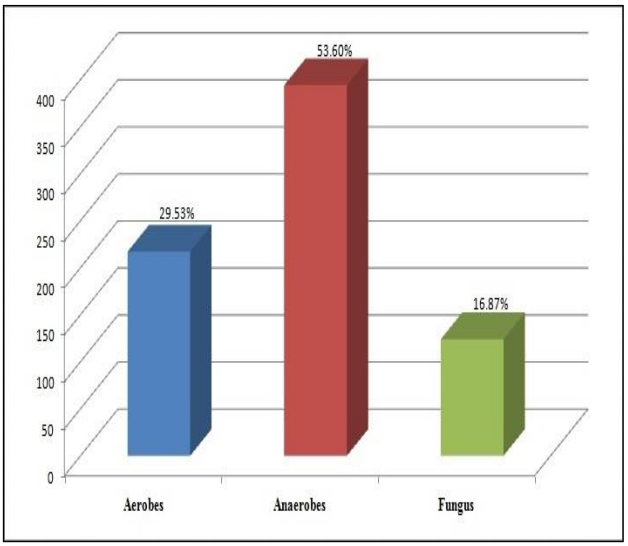

Figure 1: Types of pathogens identified from the specimens of recurrent furunculosis.

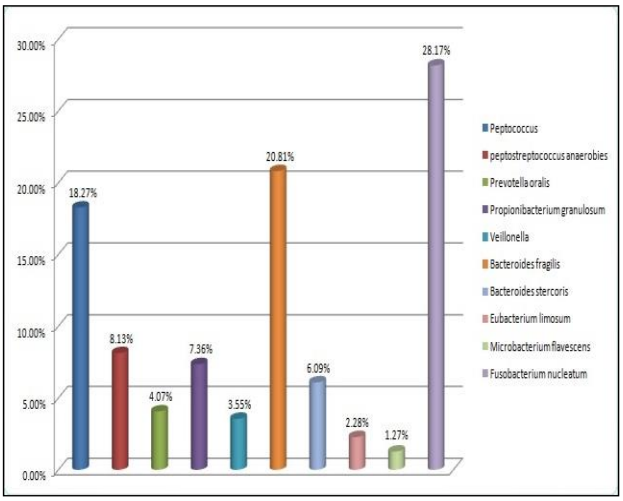

Figure 2: Spectrum of anaerobes isolated from the specimens of recurrent furunculosis.

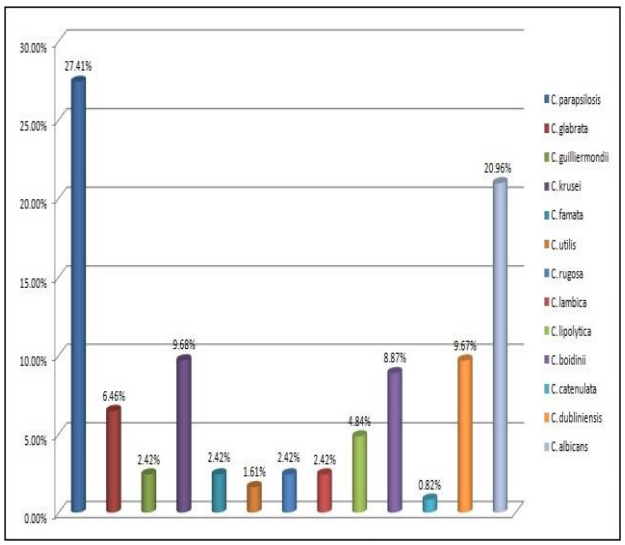

Figure 3: Spectrum of fungi isolated from the specimens of recurrent furunculosis.

DISCUSSION

Furuncles arise in hair-bearing sites, particularly in regions subject to friction, occlusion, and perspiration, such as the neck, face, axillae, and buttocks. They may complicate pre-existing lesions such as atopic dermatitis, excoriations, abrasions, scabies, or pediculosis, but occur more often in the absence of any local predisposing causes.[6,7] The propensity for certain individuals to develop recurrent furunculosis is not fully understood. However, many factors are associated with recurrence.[2]

The risk factors of recurrence were a positive family history, anemia, previous antibiotic therapy, diabetes mellitus, previous hospitalization, multiplicity of lesions, poor personal hygiene, and associated diseases.[2] Established skin diseases such as atopic dermatitis, chronic wounds, or leg ulcers increase the susceptibility to bacterial colonization and are more prone to develop furunculosis.[8] Deficiency of mannose-binding lectin as well as impaired neutrophil function in mentally retarded adults have also been associated with furunculosis.[9-11] Obesity and hematological disorders are also predisposing factors.[1]

In our case series, we found 58.24% cases of furunculosis and 41.76% cases of RF. In the present study the genus *Peptococcus 18.27%, Peptostreptococcus anaerobies 8.13%, Prevotella oralis 4.07%, Propionibacterium granulosum 7.36%, Veillonella 3.55%, Bacteroides fragilis 20.81%, Bacteroides stercoris 6.09%, Eubacterium limosum 2.28%, Microbacterium flavescens 1.27% and Fusobacterium nucleatum 28.17%. Amongst fungi C. parapsilosis 27.41%, C. glabrata 6.46%, C. guilliermondii 2.42%, C. krusei 9.68%, C. famata 2.42%, C. utilis 1.61%, C. rugosa 2.42%, C. lambica 2.42%, C.*

lipolytica 4.84%, C. boidinii 8.87%, C. catenulata 0.82%, C. dubliniensis 9.67% and C. albicans 20.96%. Registering a total of 1760 patients this study is the largest study till date. El-Gillany reported *Staphylococcus aureus* 89.2% and 100% of recurrent and non-recurrent furunculosis patients, respectively while Davido et al reported 63.0% Staphylococcus aureus in cases of recurrent furunculosis.[2,12]

It has been observed that the role of anaerobes in recurrence had not been documented in previous studies. It may be possible the culture negative recurrent cases may be caused by such pathogens. It would not be out of place to mention that since enough work has not been done on recurrent furunculosis and no study has mentioned anaerobes as a causative pathogen in such cases; consequently, no literature is available on the subject. Hence this study is a pioneer in this respect.

CONCLUSION

The present study illustrates that anaerobes and fungi play a very important role in cases of recurrent furunculosis. When we will think upon anaerobic and fungal etiologies, possibility of recurrence may minimize; hence it would reduce the morbidity and other possible complications due to prolonged antibiotic therapy.

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Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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