

METRONIDAZOLE RESISTANCE IN ANAEROBES ISOLATED FROM CHRONIC PERIODONTITIS CASESSushma Narayan Pednekar¹, Sae Satish Pol², Sangeeta Andhare Agrawal³, Renu Satish Bharadwaj⁴¹Assistant Professor, Department of Microbiology, B. J. Government Medical College, Pune.²Associate Professor, Department of Microbiology, B. J. Government Medical College, Pune.³Professor, Department of Dentistry, B. J. Government Medical College, Pune.⁴Professor & HOD, Department of Microbiology, B. J. Government Medical College, Pune.**ABSTRACT**

Periodontitis is the most frequent oral health problem in the world. The infection is primarily caused by anaerobic microorganisms. Metronidazole is the most commonly used drug to treat the infection but recently the anaerobes have shown the resistance to this drug. Therefore, the present study was undertaken to isolate and identify the anaerobes associated with periodontitis and study their susceptibility pattern to the Metronidazole. Total 90 samples were collected from chronic periodontitis cases. Anaerobes were isolated in 71% of periodontitis cases. Gram positive organisms were more predominantly isolated than Gram negative organisms. The Gram negative anaerobes were found to be 100% sensitive to Metronidazole while Gram positive anaerobes showed 8% resistance to Metronidazole.

KEYWORDS

Anaerobes, Chronic periodontitis, Metronidazole.

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INTRODUCTION

Chronic periodontitis is the major cause of tooth loss in adults.^[1] It is multifactorial in etiology. Bacteria play an important role in pathogenesis. Anaerobic bacteria are predominantly implicated in their pathogenesis.^[2] Detection of anaerobic bacteria along with their susceptibility pattern is important for better management of any anaerobic infections. However, most laboratories do not attempt to isolate or do the susceptibility testing of anaerobes as it is very tedious, costly and time consuming. The commonly used antimicrobial for anaerobic infection is Metronidazole. However, anaerobes are now developing resistance to this Nitroimidazoles also. The present study was undertaken to identify the role of anaerobes in chronic periodontitis patients with their antimicrobial susceptibility pattern to Metronidazole.

Samples were collected from 90 patients showing clinical and radiological evidence of chronic periodontitis with the assistance of the treating dentists. A total 25 samples were collected from subjects without clinical signs of periodontal disease as a control group. The samples were processed for isolation and identification of anaerobic bacteria as per standard microbiological techniques. The antimicrobial susceptibility of anaerobes for Metronidazole was done by using E test (Biomerieux) method as per CLSI guidelines. Anaerobes were isolated in 71% of periodontitis cases and 24% of healthy subjects. Gram positive organisms were more predominantly isolated than Gram negative from periodontitis patients (Table 1). Van Winkelhoff *et al.*^[3] has reported *Peptococcus micros* (94%), *Prevotella* SPP (87.9%) and *Porphyromonas* SPP (59%) while Salari *et al.*^[4] has found *Peptococcus micros* (1.3%), *Porphyromonas* SPP (21.9%) and *Prevotella* SPP (10.5%) as the predominant anaerobes.

These variations could be attributed to geographical differences. Anaerobes were more frequently isolated from periodontitis patients than control group showing their association with periodontitis (Table 1). The Gram negative anaerobes were found to be 100% sensitive to Metronidazole while Gram positive anaerobes showed 8% resistance to Metronidazole. Catherine *et al.* have reported 48.2% resistance to Metronidazole in anaerobes isolated from foot ulcers.^[5]

Not much data is available on Metronidazole resistance in anaerobes isolated from chronic periodontitis cases. Resistance to Metronidazole observed in the present study is alarming and highlights the need of isolating anaerobes from periodontal pockets and studying their antimicrobial susceptibility pattern for better management of patients with chronic periodontitis.

Anaerobes Isolated	Periodontitis Patients N (%)	Healthy Subjects N (%)
Gram Positive Organisms		
Peptostreptococcus	12 (13.3)	00
Products	10 (11.1)	1 (4)
Peptostreptococcus Micros	10 (11.1)	2 (8)
Peptostreptococcus Anaerobius	6 (6.6)	1 (4)
Peptostreptococcus Magnus	5 (4.5)	00
Eubacterium Spp.		
Gram Negative Organisms		
Porphyromonas spp.	10 (11.1)	00
Prevotella spp.	11 (12.2)	2 (8)
	n=64	n=6

Table 1: Spectrum of anaerobes isolated from study & control group

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