World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:10, No:12, 2016

Spectrum of Bacteria Causing Oral and Maxillofacial Infections and Their Antibiotic Susceptibility among Patients Attending Muhimbili National Hospital

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Abstract : Background: In Tanzania bacteriological studies of etiological agents of oro-facial infections are very limited, and very few have investigated anaerobes. The aim of this study was to determine the spectrum of bacterial agents involved in oral and maxillofacial infections in patients attending Muhimbili National Hospital, Dar-es-salaam, Tanzania. Method: This was a hospital based descriptive cross-sectional study that was conducted in the Department of Oral and Maxillofacial Surgery of the Muhimbili National Hospital in Dar es Salaam, Tanzania from 1st January 2014 to 31st August 2014. Seventy (70) patients with various forms of oral and maxillofacial infections who were recruited for the study. The study participants were interviewed using a prepared questionnaire after getting their consent. Pus aspirate was cultured on Blood agar, Chocolate Agar, MacConkey agar and incubated aerobically at 37°C. Imported blood agar was used for anaerobic culture whereby they were incubated at 37°Cin anaerobic jars in an atmosphere of generated using commercial gas-generating kits in accordance with manufacturer's instructions. Plates were incubated at 37°C for 24 hours (For aerobic culture and 48 hours for anaerobic cultures). Gram negative rods were identified using API 20E while all other isolates were identified by conventional biochemical tests. Antibiotic sensitivity testing for isolated aerobic and anaerobic bacteria was detected by the disk diffusion, agar dilution and E-test using routine and commercially available antibiotics used to treat oral facial infections. Results: This study comprised of 41 (58.5%) males and 29 (41.5%) females with a mean age of 32 years SD +/-15.1 and a range of 19 to 70 years. A total of 161 bacteria strains were isolated from specimens obtained from 70 patients which were an average of 2.3 isolates per patient. Of these 103 were aerobic organism and 58 were strict anaerobes. A complex mix of strict anaerobes and facultative anaerobes accounted for 87% of all infections.The most frequent aerobes isolated was streptococcus spp 70 (70%) followed by Staphylococcus spp 18 (18%). Other organisms such as Klebsiella spp 4 (4%), Proteus spp 5 (5%) and Pseudomonas spp 2 (2%) were also seen. The anaerobic group was dominated by Prevotella spp 25 (43%) followed by Peptostreptococcus spp 18 (31%); other isolates were Pseudomonas spp 2 (1%), black pigmented Pophyromonas spp 4 (5%), Fusobacterium spp 3 (3%) and Bacteroides spp 5 (8%). Majority of these organisms were sensitive to Amoxicillin (98%), Gentamycin (89%), and Ciprofloxacin (100%). A 40% resistance to metronidazole was observed in Bacteroides spp otherwise this drug and others displayed good activity against anaerobes. Conclusions: Oral and maxillofacial facial infections at Muhimbili National Hospital are mostly caused by streptococcus spp and Prevotella spp. Strict anaerobes accounted for 36% of all isolates. The profile of isolates should assist in selecting empiric therapy for infections of the oral and maxillofacial region. Inclusion of antimicrobial agents against anaerobic bacteria is highly recommended.

Keywords : bacteria, oral and maxillofacial infections, antibiotic susceptibility, Tanzania
Conference Title : ICMMI 2016 : International Conference on Medical Microbiology and Immunology
Conference Location : Bangkok, Thailand
Conference Dates : December 12-13, 2016