

**Effect of antimicrobial agents on oral microorganisms**

Odontogenic infections are of increasing importance in dentistry. From this standpoint, the subject of this dissertation thesis was well chosen. On the other hand, prospective instead retrospective character of the study would be better approach in my opinion. Moreover, as doctoral study programme of this postgraduate student is dentistry and not microbiology, I expected evaluation of relations between clinical signs of infection and microorganisms in particular.

Parts Introduction and Literature review are well processed, although some petty factual errors occur there. Cephalosporins should be ranked among  $\beta$ -lactams in enumeration of antibiotic groups (p. 7). Medically important Gram-positive cocci belong to facultative anaerobes or "true" anaerobes; however none are "true" aerobes according to metabolic pathways (p. 10). Original E-test producer (AB Biodisk) was Swedish not U.S. company; current producer is bioMérieux (p. 24). In general, I cannot agree with author's statement that MICs of fourth cephalosporin generation are higher in comparison with older generations, particularly in context with dentistry patients who are usually outpatients (p. 30). Chapter 2.7 of the Literature review lacks at least brief covering text; table only is not very suitable in my opinion.

Evaluation of microorganisms isolated from a large group of patients during the long time span (12 years) enabling statistical evaluation of results from epidemiological point of view is the main advantage of this study in my opinion. Both general and all specific aims of the study were well executed. However, as I stated above, more clinically focused study would be more beneficial.

In Materials and methods section, sampling procedure and microbial processing including susceptibility testing of isolates are well chosen and described in general. However, at first, it is not stated if patients included in the study, attending the Department of Dentistry, are outpatients only or also hospitalized patients. Further, it is stated that they suffered from suspected or proven orofacial bacterial infections and their dental and medical history was traced, but those data are not utilized in this study. It is also not specified if samples from all patients were taken from still the same orofacial regions. Further, it is not clearly stated, if any samples were processed by the author; I would expect this definitely in the course of her postgraduate study because of the main aim of the thesis. If not, microbiological procedures are described idly in detail. And finally, it is not clear, which bacterial species were considered as normal commensals by the author.

Results section is well-arranged using graphs and evaluated by two simple statistical methods. The results itself contribute to expansion of knowledge in the field of microbial epidemiology in the orofacial region. However, I lack separation of patients into odontogenic and non-odontogenic groups. Further, orofacial infections should be clinically specified, by diagnosis at least. In Site of specimens subsection, location of abscesses should be specified; exact type of sample is not abscess, but pus in this case.

In Discussion section, all results of the study are compared with the data in the literature. However, I lack interpretation of microbiological findings. Most of isolated bacterial species (e.g. oral streptococci,

coagulase-negative staphylococci and most corynebacteria) are common part of normal microflora in my opinion. Other species like hemophili, enterobacteria, non-fermenters etc. but also beta-hemolytic streptococci are rather commensals as pathogens in odontogenic infections. Anyway, opportunistic pathogens should be evaluated quantitatively or in relation to the clinical status of patient. As most of isolated bacteria were susceptible to antibiotics commonly used for treatment of the respective species in general, discussion of *in vitro* antifungal susceptibility testing results in relation to the course of antibacterial treatment of patients should be performed.

The manuscript is written by good English to what extent I can judge it. However, keying errors and wrongly stated terms occur in the text. Some examples: "PCRor sequencing (p. 9); Enterobacteriaceae (p. 10) and all bacterial family names in tables i, ii and iii (p. 12-13) are not written in italics; immerse objective instead immersion objective, Bio Mérieux instead bioMérieux (both p. 15) etc. Further, use of abbreviations is sometimes not according to conventional practice (e.g. *Str. pneumoniae*, *Staph. aureus*).

For debate on this dissertation thesis, I have the following questions to the author:

1. Are any data available about antibiotic treatment of the patients included in the study in relation to *in vitro* susceptibility testing performed?
2. What is the author's opinion (1) on the role of microbial biofilm in the oral cavity and (2) on diagnostic methods for its detection?
3. What signification has sampling of the throat swab for diagnosis of odontogenic infections according to author's opinion? This is not orofacial region in fact, I think.
4. Which microbes the author means under the term "oral microbiota" in table 5? This table refers to table 6 for more details about microorganisms; however, no explanation of this term is stated there.
5. Using cultivation techniques, facultative anaerobes were found out as the most prevalent microflora in the orofacial region, although I would expect that strict and aerotolerant anaerobes which are more difficult cultivable occur more frequently there. Why the author didn't use genetic methods for their detection?

**Conclusion:** Despite deficiencies stated above, I suppose that dissertation thesis of Marina George Kudiyirickal, D.D.S. meets from general view requirements claimed on this type of scientific work and, therefore, I can recommend it for defense.

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