JOURNAL OF APPLIED DENTAL AND MEDICAL SCIENCES

ISSN NO. - 2454-2288 www.joadms.org Vol. I Issue II July-September 2015

ORIGINAL ARTICLE

A clinical analysis of airborne infections in the dental offices of India

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ARTICLE INFO

Article history:
Received 24th July 2015
Accepted 9th Aug 2015

Keywords:
Air borne infections, air-borne microbes; antibiotic resistance; cross-infection; dental clinics.

ABSTRACT

In India the risk of airborne infections from dental offices to the dentist and patients are high. In our clinical study we have taken the samples from different speciality clinics to know bacterial overloads. We did the analysis to know bacterial colonies at the surfaces of dental clinics in various part of India. Result of study shows, Staphylococcus bacteria were found in all areas of the dental clinics. Total bacterial counts in the air of dental surgery rooms and in non-surgery rooms without direct involvement with dental operations were in the range of 120-280 cfu/m3.

INTRODUCTION

In the developing country like India, the role of dentist in the management of oral diseases is very important. In India the patients comes in the dental offices are having many latent disorders which can harm and infects the dental surgeons. For the prevention of these dangerous airborne infections, dental surgeon should have detail knowledge of the diseases as well as post infection considerations. In this clinical analysis many clinical samples were taken on study settle plates from many dental offices and study data club with the other study articles to make this review of literature. The purpose of this study was to ascertain the numbers, types, and antibiotic resistance profiles of organisms arriving on a in a dental clinic by the air-borne route.

METHODOLOGY

The Sampling was done during morning hours (8-12 AM) and all dental wards where

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supervisor and students were stationed were sampled. Air contamination was monitored in all parts of dental wards by using a slit-to-agar biological air sampler[1-7]. This sampler drew air at a high speed through a narrow slit and blew it over a solid nutrient agar plate. The plate rotated at a uniform speed under the slit, and a complete rotation of the plate took 30 to 45 minutes. In each case, the air sampler was placed about 1.5 m from the patient's mouth at breathing level of dental personnel to calculate total counts of bacteria, fungi, Staphylococci, and Streptococci[10]. The plates were placed in an incubator and incubated aerobically for 2 days at 37°C. The total numbers of colony forming units (CFUs) in the range of 30-300 were counted, and the data were expressed as the number of CFU per cubic meter of air sampled[1- 2].

RESULTS

Staphylococcus bacteria were found in all areas of the dental school. The total fungi counts in the air of dental surgery rooms and in general rooms without direct involvement with dental operations were in the range of 1-70 cfu/m3 and 1-5 cfu/m3, respectively. The total bacterial counts in the air of dental surgery rooms and in non-surgery rooms without direct involvement with dental operations were in the range of 110-320 cfu/m3 and 50-148 cfu/m3, respectively.

DISCUSSION

In this study, the air samples of dental rooms have been studied. Presently the use of settle plates is a passive air sampling technique, active air samplers which measure particles suspended in the air during a specific time period can also be used to determine the level of microbial air contamination[9]. Active air samplers measure the number of colony-forming units present in 1 m3 of air collected over a 15 min sampling period (Pasquarella et al., 2000). This method forms the basis for official standards in air control and is often thought to be the more appropriate sampling strategy[8].

Staphylococcus species were found in indoor air of dental school and the active role of dentistry. Microbial contamination of dental surgical areas in the range of 110-320cfu/m3 is comparable to previous studies[1]. There are some criteria for acceptable levels of indoor air. Non-pathogenic microorganisms and bacteria referred to are implicitly ambient or environmental bacteria. However, in regard to pathogenic bacteria and viruses, particularly contagious pathogens, there are no safe limits[1].

Table 1: Presenting No of Bacterial Colonies with respective bacterial species[1].	
Place of sampling	**No. Bacterial Colonies / its species**
General dentistry	210/ Staphyloccocus auricularis, Staphylococcous aureus.
Jaw and mouth Surgery	110/ Staphyloccocus auricularis, Strepotococcus haemolyticus, Staphyloccocus saprophyticus, and Staphyloccocus epidermidis
Endodontics	183/ Staphyloccocus auricularis, micrococcus and bacillus cereus
Orthodontics	320/ Staphloccocus auricularis, Staphyloccocus epidermidis
Pediatrics	210/ Bacillus cereus, Staphylococcus auricularis
Operative dentistry	168/ Staphylococcus auricularis, Staphylococcous saprophyticus, Staphyloccocus aureus and bacillus cereus
Periodontics	155/ Staphyloccocus saprophyticus, Staphylococcous aureus and Streptococcus haemolyticus
Pathology	177/ Staphyloccocus epidermidis, Staphyloccocus auricularis, bacillus cereus and Staphyloccocus saprophyticus

CONCLUSION

The results outlined here have shown that a wide variety of cutaneous, oral, respiratory and environmental bacteria can be detected on settle plates in a dental clinic and that, of those microbes that can be cultivated on routine media in the laboratory, P. acnes, M. luteus and S. epidermidis are the most likely to contaminate surfaces in a dental clinic by the air-borne route.

ACKNOWLEDGMENTS

We also would like to thank our senior teacher Late Dr. M.D. Shringarpure for his valuable guidance during this study.

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How to cite this article: Baonerkar H A, Kokal S , Zope S, Kashid V.A clinical analysis of airborne infections in the dental offices of India. JOADMS 2015;1(2):9-12.
Source of Support: Nil, Conflict of Interest: None declared