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RESEARCH ARTICLE

ANTIBIOTIC PROPHYLAXIS IN CONGENITAL HEART DISEASE HOW AWARE ARE WE????

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Abstract

Congenital cardiac disease is found to be one of the most common developmental anomalies in children, with increased risk of bacterial endocarditis. This study was done to evaluate the knowledge and attitude of the paediatric dental practitioners for the use of antibiotic prophylaxis

Material and Methods

The study is a cross sectional questionnaire survey conducted among the practising Paedodontists in India. The questionnaire was designed based on the current recommendations of American Heart Association and AAPD guidelines. A total of 102 paediatric dentists responded to the survey.

Results

81% of the respondents perform treatment in patients with congenital heart disease. 19% who did not prefer performing dental treatment in such patients weren't sure of handling the situation and had a fear of risk involved. 73% of the respondents preferred extraction followed by space maintenance, whereas 61% opted pulpotomy or pulpectomy as a treatment option. 23% felt pulp therapy upto indirect pulp capping as a safer option. About 90% believed and prescribed Amoxicillin/ Ampicillin 50mg/kg as the drug of choice for prophylaxis. 76% believed that there is chance of developing resistance to antibiotics used. AHA guidelines are the most relied one and 92% of the practitioners updated their knowledge frequently.

Discussion

Majority of the practitioners followed the Guidelines & updated themselves regularly. In spite of the establishment of guidelines, a minority of practitioners have inadequate knowledge regarding Conditions requiring Prophylaxis & Antibiotics used and the Treatments Recommended.

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INTRODUCTION

Congenital cardiac disease is found to be one of the most common developmental anomalies in children, prevalence being 8-10 of 1000 live births¹. Congenital or acquired abnormalities involving the cardiac endothelium predisposes to the risk of bacterial endocarditis which occur following dental procedure due to bacteraemia^{2,3}. Therefore this is of serious concern, given the relatively high incidence of dental disease present in

children.^{4,5} The knowledge of the paediatric dentists and the guidelines followed in practice gains clinical significance in this scenario. Guidelines are intended to provide guidance in the proper and judicious use of antibiotic therapy in the treatment of oral conditions. This study was done to evaluate the knowledge and attitude of the paediatric dental practitioners for the use of antibiotic prophylaxis in children with congenital heart disease and the guidelines they follow, so as to assess the need for creating awareness among them to so as to give better treatment with fewer adverse complications.

MATERIALS AND METHODS

The study is a cross sectional survey conducted among the practising Paedodontists in India, using a questionnaire (Annexure 1). The questionnaire was validated by circulating it among three specialists who later did not participate in the study. The questionnaire had 14 questions, which assessed the knowledge, attitude and behaviour of paedodontists and the guidelines they followed in treatment of patients with congenital heart disease. The questionnaire was designed based on the current recommendations of American Heart Association (AHA)⁶ and American Academy of Paediatric Dentistry (AAPD) guidelines⁷. The study was commenced after obtaining approval from the Institutional Ethics committee.

Questionnaires were circulated online among the practicing paedodontists and all the completely filled forms were included for the study. Informed consent was implied when subjects responded to the study and confidentiality was maintained. The responses for the questions were recorded in Excel sheet and the results were analysed and compared with the standard guidelines. A total of 102 paediatric dentists responded to the survey.

RESULTS

Among the 102 completely filled forms, 81% of the respondents perform treatment in patients with congenital heart disease. 19% who did not prefer performing dental treatment in such patients weren't sure of handling the situation and had a fear of risk involved.

According to the question regarding the conditions requiring antibiotic prophylaxis, all the answers in the choice were correct and only 30% of the respondents got it correct.

73% of the respondents preferred extraction followed by space maintenance for management of deep carious deciduous teeth, whereas 61% opted to do pulpotomy or pulpectomy as a treatment option in tooth requiring pulp therapy. 23% felt pulp therapy upto indirect pulp capping was a safer option.

About 11% of respondents considered consultation or consent from Paediatrician wasn't required before starting any dental treatment.

About 90% believed and prescribed Amoxicillin/ Ampicillin 50mg/kg as the drug of choice for prophylaxis. Only 10 percent prescribed other drugs based on the recommendations by AHA. 76% believed that there is chance of developing resistance to antibiotics used and believed that a same antibiotic shouldn't be given at frequent intervals. About 42% of the respondents preferred prescribing antibiotics after a minimum of 1month interval and remaining of them preferred maintain a gap of 6 months.

Extractions were considered high risk procedure by 83%, pulp therapy by 52%, oral prophylaxis by 29% and fixed orthodontic treatment by 5% of respondents.

AHA guidelines are the most relied one (62%), followed by AAPD guidelines (48%) and remaining 6% relied upon guidelines learnt during residency. 53% considered there is a need for a separate guideline for Indian population.

92% of the practitioners updated their knowledge frequently. Among which 78% relied on reading published articles, 53% visiting medical websites, 15% through personal communications and rest 3% by other means.

DISCUSSION

The awareness regarding the conditions requiring Antibiotic Prophylaxis for children with risk of endocarditis was found to be inadequate. Among the practitioners only 33 respondents were aware of the fact that all the conditions given in the questionnaire were at high risk according to AHA guidelines⁶.

Extractions were considered high risk procedure by majority of the respondents and oral prophylaxis and pulp therapy as low risk. According to the AHA recommendations⁶, all dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa are considered as high risk procedure. Pulp therapy is considered contraindicated in patients with congenital heart disease as the procedure doesn't provide success as high as required to balance the risk involved^{8,9}.

Consultation with the patient's physician may be necessary to determine the severity of the condition, susceptibility to bacteremia-induced infections and the risk versus benefit can be assessed by a paediatric consent¹⁰.

The knowledge about the Antibiotic recommendations is of prime importance in treatment planning. Hayes and Fasules¹¹, in 2001 reported a deficiency of knowledge among dentists regarding the indications for prophylaxis and the antibiotic regimen required to prevent endocarditis. Before initiating care, the dentist should obtain a thorough medical and dental history, perform a physical examination, formulate a complete treatment plan, and discuss the treatment with the child's physician or cardiologist.

Every child with cardiac conditions need not be given antibiotic prophylaxis and only following are considered as having the highest risk⁶

- Prosthetic cardiac valve or prosthetic material used for cardiac valve repair
- Previous infective endocarditis
- Unrepaired cyanotic CHD, including palliative shunts and conduits
- Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first six months after the procedure
- Repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device (which inhibit endothelialization)
- Cardiac transplantation recipients who develop cardiac valvulopathy

Conservative use of antibiotics minimizes the risk of developing resistance to antibiotics. The widespread antibiotic usage has resulted in development of resistance among common bacteria. Also infective endocarditis is much more likely to result from frequent exposure to random bacteremias associated with daily activities such as harsh toothbrushing, flossing, chewing, using toothpicks etc. Since antibiotic prophylaxis prevents an exceedingly small number of cases of infective endocarditis, the risk of antibiotic-associated adverse events exceeds the benefit. AAPD recommends that maintenance of optimal oral health and hygiene may reduce the incidence of bacteremia from daily activities and is more important than prophylactic antibiotics for a dental procedure to reduce the risk of infective endocarditis^{6,7}.

Guidelines helps us to take informed and evidenced based decisions. Upgradation of knowledge regarding the guidelines is also importance due to variability in the occurrence of these conditions and continuous modifications in the guidelines.

CONCLUSION

Majority of the practitioners followed the Guidelines & updated themselves regularly. In spite of the establishment of guidelines, a minority of practitioners have inadequate knowledge regarding conditions requiring prophylaxis & antibiotics used and the treatments recommended

To diminish the rate at which resistance is increasing, health care providers must be prudent in the use of antibiotics. Modification in the system with awareness programmes being included at regulatory level, proper education of Professionals may provide fruitful results.

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