

A RANDOMIZED STUDY ON PROPHYLACTIC ANTIBIOTICS IN MAXILLOFACIAL SURGERY

Correspondance to:

Dr. Vijay ebenezer¹,

professor and head of the department of oral and maxillofacial surgery, Sree balaji dental college and hospital, pallikaranai, chennai-100.

Author Details:

Dr. Vijay ebenezer¹, Dr. Vigil dev asir²

professor and head of the department of oral and maxillofacial surgery, Sree balaji dental college and hospital, pallikaranai, chennai-100.

Reader in the department of oral and maxillofacial surgery, Sree balaji dental college and hospital, pallikaranai, chennai-100.

ABSTRACT-

Antibiotic coverage plays a vital role in maxillofacial surgery. In this study of 100 patients during the academic year 2018 in the department of oral maxillofacial surgery in sree balaji dental college and hospital was taken. A sample size of group-A with 50 patient given prophylactic antibiotic coverage after the procedure and a sample size group- B without prophylactic antibiotic coverage after the procedure was done. In this clindamycin, amoxicillin was advised for the patient after the procedure was done.

Keywords: Antibiotic prophylaxis, amoxicillin, clindamycin, surgical management

Material and Methods-

In this study randomized study was done in 100 patients. Sample size group-A with prophylactic antibiotic and group- B without antibiotic prophylactic after the surgical procedure was taken under consideration. The prophylactic antibiotic coverage administered was amoxicillin and clindamycin for a duration of 4 to 5 days after the surgical procedure.

Results-

The antibiotic coverage shows good result in maxillofacial procedure. Group-A patient showed to have better result when compared to group-B patients.

1. Introduction-

The surgical intervention of bacteria present in blood plays a vital role to overcome postoperative complication, therapeutic antibiotic coverage such as hard and soft tissue inflammation plays a key role. The administered antibiotic should have a broad spectrum antibiotic against pathogens. The key issue to maintain the ratio between minimal inhibitory concentration and peak concentration. The spread of secondary infection is to be prevented with the proper antibiotic coverage. The dosage of antibiotics is necessary to prevent hospital acquired bacteremia. The recommendation concerning the use of antibiotic in post op infection of maxillofacial surgery procedures in such circumstances it appears reasonable to set the relevant standard for prophylactic coverage to prevent pain and swelling after each surgical procedure.

2. Discussion

With the multidrug resistant to the antibacterial medication the appearance of the new effective drug is very limited. It is soon becoming a postantibiotic era if the drug against the

multidrug-resistant or hospital-acquired infection is not found soon [7,8,9]. According to, BAUMGARTNER and XIA, from USA, have assessed antibiotic resistance and the percentages of susceptibility for the 98 species were penicillin v: (85%), (91%); amoxicillin+ clavulanic acid: (100%); and clindamycin: (96%) [11]. The results we obtained were penicillin v: 40%; amoxicillin+ clavulanic acid 70%; and clindamycin 40%. According to REGA et al. the most common bacteria isolated from head and neck space infections of odontogenic origin were streptococcus viridans [13,14,15]. The bacteria were found to be 70% gram-positive. According to WALIA et al. from India were staphylococcus aureus, klebsiella, escherichia coli and peptostreptococcus [13]. The literature of the subject features the enterococcus strains becoming resistant to vancomycin, they are of responsible for urinary tract infection, sepsis, endocarditis. Linezolid newest antibiotic fail to produce a cure for continuous proliferation vte induced infection, mrsa, multidrug-resistant pseudomonas aeruginosa, escherichia coli esbl, and klebsiella pneumoniae esbl. Tan et al assessed for the incidence of pain, oedema, bleeding for a fortnight after the treatment. The results of comparative studies in our patient group show that antibiotic prophylaxis post surgical treatment has impact on the result of the treatment and postoperative complications [16,17,18]. According to SCHAEFER and CATERSON of boston conducted a retrospective study of fewer than 100 patients treated by osteosynthesis because of mandibular fracture. They compared the effectiveness of antibiotic prevention with ampicillin combined with sulbactam versus clindamycin. Antibiotics are indicated for old age patients with systemic illnesses and in old fractures complicated by chronic inflammation [20,21]. Group A β -haemolytic streptococcus pyogenes in a healthy patients the bacterium is thought to be responsible for circa 15–30% cases of acute pharyngitis in childrens. In the literature, many complications are described where the bacterium is the etiological factor. In the present study, the antibiotic was administered with or without to the dental surgical patients. Prophylactic the patients were given the antibiotics for a mean duration of 4 days after post-surgical for the duration of 4-5 days. Patient with cardiac anomalies were more susceptible for the infective endocarditis. Limitations to this study include the small sample size and covers only a remote area. In patients with poor oral health or uncontrolled co-morbidities prophylactic antibiotic is recommended; In a systematic review by the cochrane collaboration on the use of antibiotics for infection prophylaxis following tooth extractions or the implant placement were found that antibiotics reduced the risk of infection, when compared to treatment without prophylaxis. Thus the conclusion of the study that antibiotics are beneficial for reducing failure of dental implants, specifically 1 hour before the procedure amoxicillin or clindamycin 2 or 3 grams by mouth as a single dose are beneficial [23,24,25].

3. Conclusions

The majority of the patient under prophylactic antibiotic dosage shows good result. Isolated bacteria were streptococcus mitis and streptococcus oralis, whose number has grown over the last two years. Empiric therapies in the future should be based on ciprofloxacin and gentamicin. Only 9% of antibiotic prescribing for infection prophylaxis was appropriate based on currently available evidence. Postprocedure antibiotic prescribing for implants and extractions to only 1 dose prior to the procedure could significantly increase the therapeutic effect. Guidelines for the prevention of infective endocarditis and prosthetic joint infections should be revised and to be followed worldwide.

4. References

- [1] E. M. Beltrami, i. T. Williams, c. N. Shapiro, and m. E. Chamberland, "risk and management of blood-borne infections in health care worker," clinical microbiology reviews, vol. 13, no. 3, pp. 385–407, 2000,

- [2] T. Gander, a. S. Bingoel, l. Mascolo, k. W. Grätz, and h.-t. Lübbers, “infection after dental intervention. Iatrogenic or general medical cause? Case report,” *schweizer monatschrift für zahnmedizin*, vol. 123, no. 1, pp. 19–31, 2013.
- [3] E. H. Schaefer and e. J. Caterson, “antibiotic selection for open reduction internal fixation of mandible fracture,” *journal of craniofacial surgery*, vol. 24, no. 1, pp. 85–88, 2013. Center for disease control (cdc). Antibiotic/antimicrobial resistance. Available at: <http://www.cdc.gov/drugresistance/about.html>. Accessed 5 July 2017.
- [4] Fleming-dutra ke, hersh al, shapiro dj, et al. Prevalence of inappropriate antibiotic prescriptions among us ambulatory care visits, 2010-2011. *Jama* 2016; 315:1864–73.
- [5] Suda kj, roberts rm, hunkler rj, taylor th. Antibiotic prescriptions in the community by type of provider in the united states, 2005–2010. *J am pharm assoc* 2016; 56:621–626.e1.
- [6] Y. Mouton and e. Senneville, “broad- versus narrow-spectrum antibiotic use: the role of in vitro testing and its correlation with clinical efficacy,” *postgraduate medical journal*, vol. 68, supplement 3, pp. S68–s72, 1992
- [7] G. S. Ajantha and v. Hegde, “antibacterial drug resistance and its impact on dentistry,” *the new york state dental journal*, vol. 78, no. 4, pp. 38–41, 2012.
- [8] L. Weinstein, “superinfection: a complication of antimicrobial therapy and prophylaxis,” *the american journal of surgery*, vol. 107, no. 5, pp. 704–709, 1964.
- [9] B. Schaller, p. L. Soong, j. Zix, t. Iizuka, and o. Lieger, “the role of postoperative prophylactic antibiotics in the treatment of facial fractures: a randomized, double-blind, placebo-controlled pilot clinical study. Part 2: mandibular fractures in 59 patients,” *the british journal of oral and maxillofacial surgery*, vol. 51, no. 8, pp. 803–807, 2013.
- [10] J. C. Baumgartner and t. Xia, “antibiotic susceptibility of bacteria associated with endodontic abscesses,” *journal of endodontics*, vol. 29, no. 1, pp. 44–47. chitnis as, holzbauer sm, belflower rm, et al. Epidemiology of community-associated *clostridium difficile* infection, 2009 through 2011. *Jama intern med* 2013; 173:1359–67.
- [11] Watters w 3rd, rethman mp, hanson nb, et al. Prevention of orthopaedic implant infection in patients undergoing dental procedures. *J am acad orthop surg* 2013; 21:180–9.
- [12] Quinn rh, murray jn, pezold r, sevarino ks, et al. The american academy of orthopaedic surgeons appropriate use criteria for the management of patients with orthopaedic implants undergoing dental procedures. *J bone joint surg am* 2017;
- [13] A. J. Rega, s. R. Aziz, and v. B. Ziccardi, “microbiology and antibiotic sensitivities of head and neck space infections of odontogenic origin,” *journal of oral and maxillofacial surgery*, vol. 64, no. 9, pp. 1377–1380, 2006.
- [14] I. S. Walia, r. M. Borle, d. Mehendiratta, and a. O. Yadav, “microbiology and antibiotic sensitivity of head and neck space infections of odontogenic origin,” *journal of oral and maxillofacial surgery*, vol. 13, no. 1, pp. 16–21
- [15] A. Kedzia, w. Kiewlicz, k. Maciejewska et al., “the occurrence of microorganisms in intraoral abscesses,” *medycyna doświadczalna i mikrobiologia*, vol. 57, no. 2, pp. 209–215,
- [16] W. C. Tan, m. Ong, j. Han et al., “effect of systemic antibiotics on clinical and patient-reported outcomes of implant therapy—a multicenter randomized controlled clinical trial,” *clinical oral implants research*, vol. 25, no. 2, pp. 185–193, 2003
- [17] R. T. Adelson and n. D. Adappa, “what is the proper role of oral antibiotics in the treatment of patients with chronic sinusitis?” *Current opinion in otolaryngology & head and neck surgery*, vol. 21, no. 1, pp. 61–68, 2013, chopra r, merali r, paolinelis g, et al. An audit of antimicrobial prescribing in an acute dental care department. *Prim dent j* 2014; 3:24–9.
- [18] Seager jm, howell-jones rs, dunstan fd, et al. A randomised controlled trial of clinical outreach education to rationalise antibiotic prescribing for acute dental pain in the primary care setting. *Br dent j* 2006; 201:217–22.
- [19] G. Lodi, l. Figini, a. Sardella, a. Carrassi, m. Del fabbro, and s. Furness, “antibiotics to prevent complications following tooth extractions,” *cochrane database of systematic reviews*, vol. 11, article id cd003811, 2012.

- [20] H. O. Orlans, s. J. Hornby, and i. C. J. W. Bowler, “in vitro antibiotic susceptibility patterns of bacterial keratitis isolates in oxford, uk: a 10-year review,” *eye*, vol. 25, no. 4, pp. 489–493, 2011.
- [21] Centers for disease control (cdc). Antibiotic/antimicrobial resistance. Available at: http://www.cdc.gov/drugresistance/biggest_threats.html. Accessed 5 july 2017.
- [22] Hicks la, bartoces mg, roberts rm, et al. Us outpatient antibiotic prescribing variation according to geography, patient population, and provider specialty in 2011. *Clin infect dis* 2015; 60:1308–16.