DOI: 10.7860/JCDR/2016/17439.7712

Letter to Editor

Dentistry Section

Antibiotic usage - Ectopic Impacted Lower Third Molar

INCI RANA KARACA[1], HACER ULUTÜRK[2], DERVIS YILMAZ[3]

Keywords: Antibiotic resistance, Antibacterial coverage, Cefalosporins

Dear Editor,

The failure of eruption of third molars is very common in our part of the world (Turkey, Ankara) and the removal of third molars is a routine procedure that is carried out in our department. While searching literature for articles about ''impacted third molars", the article 'Extra-Oral Approach for Removal of Ectopic Impacted Lower Third Molar: A Case Report' caught our attention. However, there are some points that we would like the authors to clarify.

Many years have passed since the first publication about antibiotic usage appeared in the international literature [1]. Although antibiotics have transformed our ability to treat infections, they also pose some problems: As antibiotic resistance increases, these lifesaving drugs do not work as well as they once did and their ability to treat infections decrease [1]. Due to the presence of antimicrobial resistance all over the world, the usage of third generation Cephalosporins, especially Cetaxim, is critical. Because Cefataxim crosses the blood-brain barrier, they are important medical agents for the treatment of infections like meningitis [2]. In the case presented by the authors, we hold the opinion that a microbiological examination could have been carried out to identify the causative microorganisms and to determine their susceptibility to certain antibiotics so that the prescription of potent antibiotics like Cefataxime could have been avoided for that kind of dentoalveolar infection.

Like the choice of an appropriate antibiotic, the administration pathway of antibiotics is also a very important issue for infection treatment [3]. With reference to the authors' case report it has been stated that intravenous antibiotic usage was preferred for the patient. The practice of antibiotic usage is based on certain fundamental principles [3]. Today it is accepted that drug usage should be comfortable for the patient [3]. This is an important point to avoid psychological and physical stress to the patient. Furthermore some antibiotics can be used intravenously as well as orally and both administration pathways share the same absorption parameters [4]. According to the study by Lamp and Freeman, 1gr loading dose of metronidazole have been applied intravenously on seven patients, and it was followed by 500mg every 8 hours either intravenously or orally and same absorption parameters were observed [4]. Several studies [2,5] have shown that Cefataxime cannot be used orally, however there are some other third generation Cefalosporins which can be used for oral applications [5]. If the authors felt the need to use Cefalosporin, would it not be better to use another third generation Cefalosporin orally?

Lastly can you clarify us about the day of antibiotic cover that the surgery was realized?

Please let us have some explanatory information on the points above.

REFERENCES

[1] Antimicrobial Resistance Global Report on Surveillance. France .*World Health Organization*.2014.
[2] Howland RD, Mycek MJ. Lipincott's Illustrated Reviews: Pharmacology. Third edition, Lippincott Williams & Wilkins. 2006.
[3] Ghali GE, Larsen PE, Waite PD. Peterson's Principles of Oral and Maxillofacial Surgery. Second edition. London: BC Decker Inc, 2004.
[4] Lamp KC , Freeman DC, Klutman NE, Lacy MK. Pharmacokinetics and Pharmacodynamics of the Nitroimidazole Antimicrobials. *Clinical Pharmacokinetics*. 1999;36(5):353-73.
[5] Carmine AA, Brogden RN, Heel RC, Speight TM, Avery GS. Cefotaxime. A review of its antibacterial activity, pharmacological properties and therapeutic use. 1983;25(3):223-89.

PARTICULARS OF CONTRIBUTORS:
1. Professor, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Gazi University, Emek / Ankara, Turkey.
2. Resident, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Gazi University, Emek / Ankara, Turkey.
3. Professor, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Gazi University, Emek / Ankara, Turkey.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Inci Rana Karach,
Gazi Üniversitesi Dis Hekimligi Fakültesi, 06510 Emek / Ankara, Turkey.
E-mail : hcrulutuerk@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None.
Date of Submission: **Oct 20, 2015**
Date of Peer Review: **Nov 29, 2015**
Date of Acceptance: **Jan 04, 2016**
Date of Publishing: **May 01, 2016**

AUTHOR'S REPLY

We re-looked into the patient case-file and are providing our reason for query particular antibiotic selection

1. The reader raises a very pertinent point which is regarding "Antibiotic Stewardship Program" which focuses on the restricted use of antibiotic. It is essential that antibiotics should be used carefully and in the right doses especially in the wake of antibiotic resistance developing in the current era [1]. With respect to this particular case we would like to bring forth certain information which we did not mention in the manuscript and we sincerely apologize for the same. In the case described in the manuscript the subject was a known case of juvenile diabetes – not well controlled and had an extremely poor oral hygiene. The patient had also completed two courses of Penicillin group of drug (Amoxycilin-clavunate) prior to the surgery, which he had got over the counter from pharmacy in the city. This background was not highlighted by us as our main focus was the surgical aspect of the case not the medical aspect. We accept this and wish this will throw more light in the case presentation.

2. Secondly, the authors another pertinent point here is regarding the use of Cefotaxime. Most of the commonly used antibiotics used postoperatively include Cefazolin and Cefuroxime. Of these two drugs Cefuroxime belongs to third generation cephalosporin. Cefotaxime antibacterial coverage is very similar to Cefuroxime and so our unit is comfortable using Cefotaxime as the drug especially when we require antibiotic therapy postoperatively [2]. Given the above background and widespread use of pencillin in the community it becomes essential that we cannot use pencillin as the first line drug unless it is an extremely clean case. Our unit policy is to use either Cefazolin – for most of the case as postoperative prophylaxis and for treating infection we prefer using Cefuroxime or Cefotaxime for treatment along with Metronidazole

3. With respect to the query regarding the use of Cefotaxime for meningitis, the dose of Cefotaxime used for meningitis is usually 2gm IV Q4-6 Hourly which is an extremely stiff dose as only in this dose will the drug cross the blood-brain barrier. The usual dose for prophylaxis or for any other case is usually 1gm IV Q8-12Hourly which we have used along with additional anerobic coverage with metronidazole [2].

4. Lastly, with respect to change to oral cephalosporins it would depend on the case. In the current case given the background of poor oral hygiene and juvenile diabetes – not well controlled previously, it was necessary that a good antibiotic coverage was given to prevent surgical site infection. Oral cephalosporins have bioavailability ranging from 50-70% which will not be suitable for the above background conditions. The only oral cephalosporins which have good bioavailability ranging >90mg/dl in blood include Cephalexin and Cephradine but they have very high MICs(Minimum Inhibitory Concentrations) and are extremely narrow spectrum making them suitable only for skin and soft tissue infections and not deeper or blood stream infections [3].

I hope this would have answered all the queries raised by the reader/reviewer. To the best of our knowledge, we have tried to give valid reasons for our actions. Our main aim in this presentation was to present a novel approach of a surgical procedure so that this may reach out to people. I wish the editor and the reader have been satisfied with our explanation. We again thank the journal and the editor for this opportunity given to us.

REFERENCES

[1] Policy Statement on Antimicrobial Stewardship by the Society for Healthcare Epidemiology of America (SHEA), the Infectious Diseases Society of America (IDSA), and the Pediatric Infectious Diseases Society (PIDS) Society for Healthcare Epidemiology of America; Infectious Diseases Society of America; Pediatric Infectious Diseases Society. *Infect Control Hosp Epidemiol*. 2012;33(4):322-27.

[2] Gilbert DN, Moellering RC, Eliopoulous GM, et al. The Sanford Guide to Antimicrobial therapy. 42nd Edition. Antimicrobial therapy. Inc.

[3] MacGregor RR, Graziani AL. Oral Administration of Antibiotics: A Rational Alternative to the Parenteral Route. *Clinical Infectious Diseases*. 1997;24:457-67.