ejpmr, 2017,4(2), 729-732

SJIF Impact Factor 4.161

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

MICROBIOLOGY AND ANTIBIOTIC SENSITIVITY STUDY IN OROFACIAL SPACE INFECTIONS USING EMLA AS AN ANAESTHETIC AGENT

Dr. Satish Patil[1], Dr. Deepak Manthale[2]*, Dr. Syed Furqhanuddin[3] and Dr. U.M. Joshi[4]

[1]Professor. Oral and Maxillofacial Surgery, S.N. Dental College, Kalaburagi.
[2]Department of Microbiology M.R. Medical College Kalaburagi.
[3]Oral and Maxillofacial Surgery, S.N. Dental College, Kalaburagi.
[4]Professor and HOD. Dept. of Oral and Maxillofacial Surgery, S.N. Dental College, Kalaburagi.

***Corresponding Author: Dr. Deepak Manthale**

Department of Microbiology M.R. Medical College Kalaburagi.

Article Received on 21/12/2016 **Article Revised on 11/01/2017** **Article Accepted on 31/01/2017**

ABSTRACT

Introduction: EMLA (Eutectic Mixture of Local Anaesthetics) cream consists of lidocaine 2.5% and prilocaine 2.5%. Itis an alternate method of providing topical anesthesia to the area being operated in the management of orofacial space infections. Microorganisms involved in these infections are identified and tested for their antibiotic susceptibility. **Patients and methods:** 50 patients with oraofacial space infections under an age group of 20-50 yearswere included in this study. Patients with systemic diseases and immunocompromised conditions were excluded from our study. **Results:** 40 patients didn't experience any pain and 10 patients experienced mild pain during the surgical procedure. The isolated organisms in our study among aerobes were Streptococcus viridans and Staphylococcus aureus predominantly. whereas Peptostreptococcus, Peptococcus species and Fusobacterium were the most commonly isolated anaerobes. All the isolated microorganisms were found sensitive to amoxicillin + CV, cefixime, penicillin, gentamycin and metronidazole. **Conclusion:** EMLA cream provided an effective anesthesia in our cases and can be used as a topical anaesthetic of choice in the management of orofacial space infections requiring surgical incision and drainage. All the isolated microorganisms were found sensitive to amoxicillin + CV, cefixime, penicillin, gentamycin and metronidazole.

KEYWORDS: EMLA; orofacial infection, microorganism, antibiotics.

INTRODUCTION

Space infections are one of the most common infections in orofacial region which requires proper intervention. There are certain methods to treat space infections, one of such approach is surgical incision and drainage. For incision and drainage, a proper anaesthesia is required. Many options to deliver anesthesia have developed over the last several decades. Application of topical anesthetics, may avoid the need for infiltrative local anesthesia injections. One of the most commonly used topical anaesthetic in dentistry is EMLA i.e. (Eutectic Mixture of Local Anaesthetics). EMLA cream (lidocaine 2.5% and prilocaine 2.5%) is an emulsion in which the oil phase is a eutectic mixture of lidocaine and prilocaine in a ratio of 1:1 by weight. TRISMUS is the hallmark of most of the oro-facial space infections, which makes the usage of local anesthetic regional nerve blocks limited. Also, the local infiltration of anesthetic solution is ineffective, due to the acidic *ph* of the surrounding tissues. Risk of aspiration is associated with sedation techniques, which in turn has fatal consequences. Of all the fascial space infections in the head and neck, Ludwig's angina is the most feared and fatal, which needs prompt surgical intervention to prevent grave consequences. One of the major speculations is regarding the method of anesthesia to be employed prior to the surgical decompression. General anesthesia with blind endotracheal intubation might lead to inadvertent rupture of retropharyngeal abscesses, further compromising these airway. EMLA in such situations is an alternate and safe method of providing topical anesthesia to the area to be drained.

Maxillofacial infections are considered to be mixed infections as both aerobic and anaerobic microorganisms are present. It is important to periodically obtain culture and susceptibility data to monitor possible changes in the types and antibiotic resistance of microorganisms responsible for odontogenic infections. Successful treatment of abscesses usually requires incision and drainage andthe selection of a suitable antibiotic. The proper selection often depends on the isolation and determination of the antibiotic susceptibility of the microorganism.

This study is designed to aid in the accurate management of oro-facial space infections using EMLA under occlusive adhesive dressing in providing anesthesia for

incision and drainage for various facial space infections and by identifying the aerobic and anaerobic organisms involved in these infections and by studying their antibiotic sensitivity,

PATIENTS AND METHODS

A total of 50 patients who visited the department of oral and maxillofacial surgery at our institution were included in the study.

Inclusion criteria

- Patients having facial space infection
- Aged between 20years to 50 years
- Patients giving informed consent for the surgical procedure.

Exclusion criteria

- Patients suffering from long standing systemic diseases or infections and Immuno suppressed conditions.
- Patients with known sensitivity to amide type local anesthetics or any other component of the product.
- Patient not willing to give informed consent

Procedure

50 Patients were included in this study. The orofacial infections were evaluatedclinically with radiographic and microbiologic aids. Pus sample collection from the abscesses was done by aspiration method using a sterile 18-gauge needle and a5-mL disposable syringe. The aspirated sample was immediatelyinoculated in the transport medium after removing excess air. The specimen was sent to microbiological laboratory within 2 hours of collection.

Clinical parameters

1. Routine blood investigation
2. Physician fitness before surgery
3. EMLA patch
4. Culture inoculation plates

Radiographic parameters

1. Orthopantomogram (OPG)
2. Intraoral periapical radiograph (IOPAR)

RESULTS

- In total of 50 patients included, 32males and 18 females patients were present.
- The age group mostly affected was in the 3rd decade of life.
- Out of 50 patients, 40 patients didn't experience any pain, and 10 patients experienced mild pain during the surgical procedure.
- The isolated organisms in our study among aerobes were Streptococcusviridans 21 (42%), Staphylococcus aureus 15 (30%), Neisseria 4 (8%) and Enterococcus 10 (20%) whereas Peptostreptococcus 16 (32%), Peptococcus species 12 (24%) and Fusobacterium 5 (10%) were the most commonly isolated anaerobes. No growth of anaerobic microbes was seen in 17 (34%) of the isolates
- Bacterial isolates obtained were subjected to antibiotic sensitivity test byKirby-Bauer disc diffusion method.
- All the isolated microorganisms were found sensitive to amoxicillin(72%), amoxicillin + CV (86%), cefixime (75%), penicillin (56%), gentamycin (80%) and metronidazole (78%).

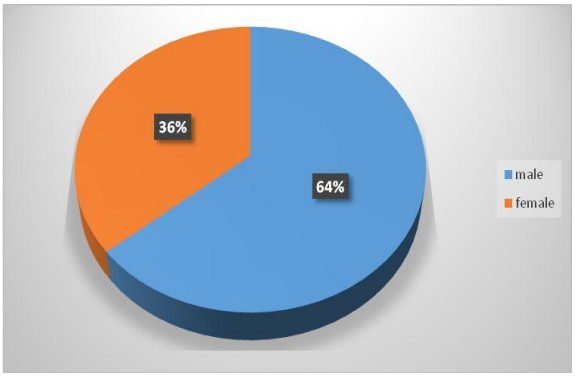

FIG1: DISTRIBUTION SHOWING CASES GENDER WISE

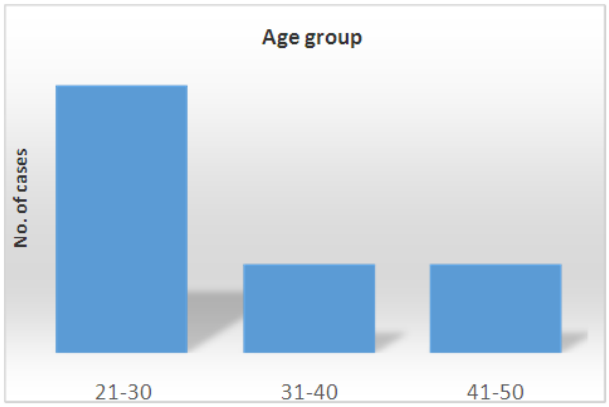

FIG2: DISTRIBUTION SHOWING CASES AGE WISE

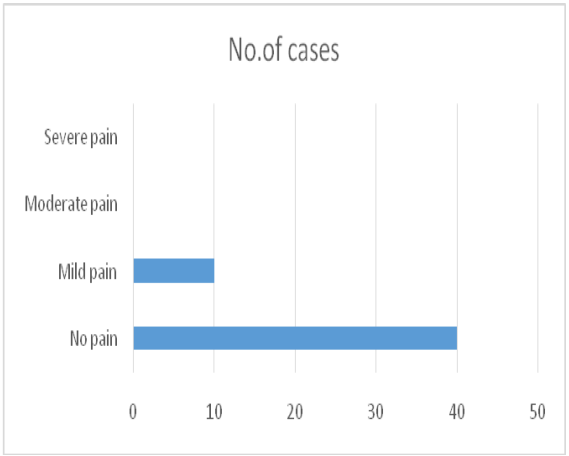

FIG3: DISTRIBUTION SHOWING CASES BASED ON PAIN THRESHOLD

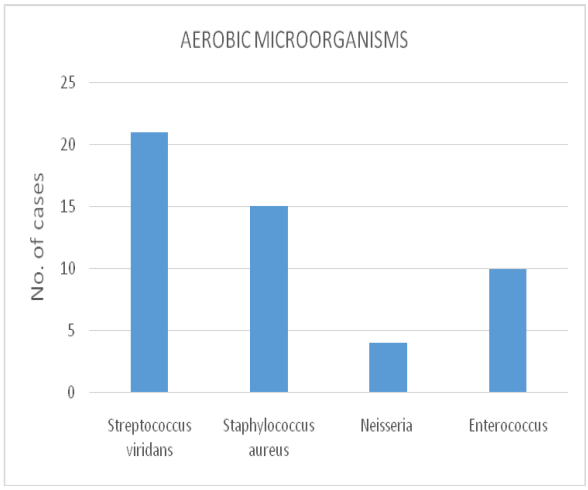

FIG4: DISTRIBUTION ACCORDING TO ISOLATED ORGANISM

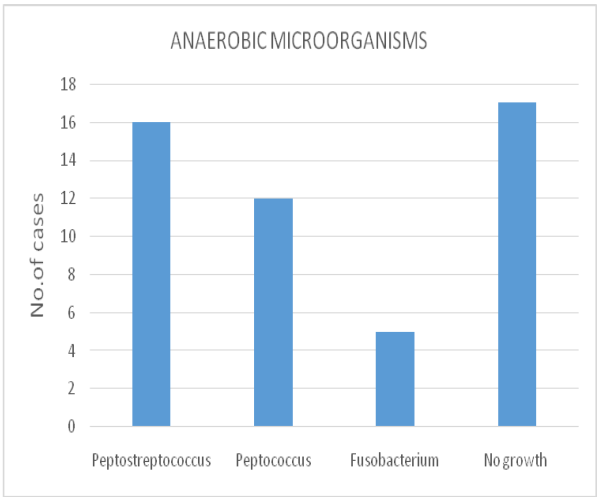

FIG5: DISTRIBUTION ACCORDING TO THE ANTIBIOTIC SENSITIVITY

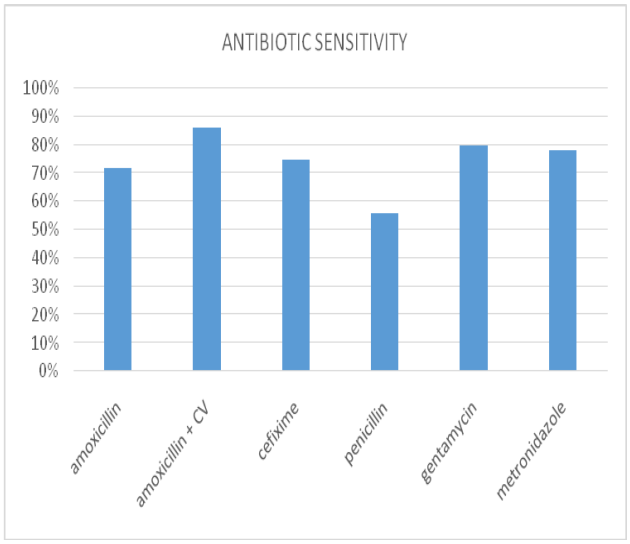

FIG6: COMPARISION OF ANTIBIOTIC SENSITIVITY BETWEEN DIFFERENT ANTIBIOTICS.

DISCUSSION

The advent of topical local anesthetic formulations was a significant innovation for optimizing analgesia for various surgical procedures. EMLA was the first successful eutectic formulation for topical use. We have evaluated the effectiveness of EMLA under occlusive dressing in providing anesthesia for I & D for various fascial space infections and found it to be 100% effective in 60% of cases and 80% effective in 40% of cases. Our finding is consistent with Anthony Eidelman[5] who found that the majority of trials demonstrated equivalent or superior analgesic efficacy for topical formulations compared with conventional lidocaine infiltration. Our findings confirm and extend those of Thune et al,[4] who found that the cream occluded with the Tegaderm dressing and applied 60 to 195 minutes before surgery provided adequate analgesia for surgical procedure. Wilber Huang et al[1] stated that EMLA is applied to the skin under occlusive dressing which facilitate absorption, which was consistent with our study. He recommended that the application time of EMLA is minimum of 1 hour and maximum of 3 hours. In contrast, Jones et al[3] observed that application 60 minutes before surgery did not give adequate anesthesia. The depth of anesthesia is highly correlated with the duration of application3.0 mm – 60 minutes, 5.0 mm – 120 minutes. EMLA has a biphasic action on cutaneous blood vessels, with a vasoconstrictive effect that is maximal after 1.5 hours, followed by vasodilatation 2 to 3 hours after application. The duration of anesthetic effect is also affected by regional blood flow. High regional blood flow of the tissue of the face will increase the clearance of EMLA. Aditya K. Gupta et al[2] stated that skin integrity, race, skin thickness, the location and depth of lesion, and the local vascular supply may influence the effectiveness of the cream. J. Lander et al[11] suggested that the efficacy of the drug varied by type of the procedure, Duration of drug applicationand anxiety. Wilber Huang et al[1] stated that the maximum recommended dose and application area is based on Patient's age, Body weight, Intact skin, Normal renal and hepatic function. Tomaz F suggested that the only side effect reported till date have been local reactions such as paleness, redness and edema. However, there was no side effects seen in our study. In the present study, we examined 50 patients and found that 32 (64%) malesand 18 (36%) females had orofacial space infections, which were similar to the findings of Zamiri B et al[7]·We observed that the frequency of infections was high in 3rd decade of life which coincidedwith study done by Ishfaq et al.[6]

The isolated organisms in our study among aerobes were Streptococcus viridans 21 (42%), Staphylococcus aureus 15 (30%), Neisseria 4 (8%) and Enterococcus 10 (20%) whereas Peptostreptococcus 16 (32%), Peptococcus species 12 (24%) and Fusobacterium 5 (10%) were the most commonly isolated anaerobes. No growth of anaerobic microbes was seen in 17 (34%) of the isolates.

The microbial findings of our study are in accordance to the studies of Poeschl et al.[9] The isolated microbes were found to be most sensitive to Amoxicillin + CV, Gentamycin and Metronidazole. This study was supported by Farmahan et al[10] and Kulkarni et al.[8]

CONCLUSION

Needle puncture and infiltrational anesthesia is generally required for minor cutaneous surgical procedures and may be associated with anxiety, fear, discomfort and pain. The use of topical anesthetics such as eutectic lidocaine/prilocaine 5% cream may provide an alternative and effective means of delivering anesthesia. We found no new bacterial strains in the samples tested. Bacteria causing odontogenic space infections remains same even today and Amoxicillin + CV combined with metronidazole yields satisfactory results.

REFERENCE

1. Huang W, Vidimos A. Topical anesthetics in dermatology. Journal of the American Academy of Dermatology. 2000 Aug 31; 43(2): 286-98.
2. Gupta AK, Sibbald RG. Eutectic lidocaine/prilocaine 5% cream and patch may provide satisfactory analgesia for excisional biopsy or curettage with electrosurgery of cutaneous lesions: a randomized, controlled, parallel group study. Journal of the American Academy of Dermatology. 1996 Sep 30; 35(3): 419-23.
3. Jones SK, HANDFIELD-JONES S, Kennedy CT. Does EMLA reduce the discomfort associated with local-anaesthetic infiltration?. Clinical and experimental dermatology. 1990 May 1; 15(3): 177-9.
4. Thune P, Faerden F, Minor BG. The analgesic effect of EMLA cream for skin biopsies. Journal of Dermatological Treatment. 1990 Jan 1; 1(5): 239-41.
5. Eidelman A, Weiss JM, Lau J, Carr DB. Topical anesthetics for dermal instrumentation: a systematic review of randomized, controlled trials. Annals of emergency medicine. 2005 Oct 31; 46(4): 343-51.
6. Ishfaq M, Khan M and Uddin Q. Odontogenic Primary Facial Space Infections— A Study. JKCD June 2012; 2: 2.
7. Zamiri B., et al Prevalence of Odontogenic Deep Head and Neck Spaces. Infection and its Correlation with Length of Hospital Stay. Shiraz Univ Dent J, 2012; 13(1): 29-35.
8. KulkarniA S, Narayanan V. Bacteriological Profile and Antibiotic Sensitivity Patterns of Odontogenic Abscesses in Patients with a History of Empiric Antibiotic Therapy. Asian J Oral Maxillofac Surg Vol 18, No 4, 2006; 18: 272-9.
9. Poeschl P W et al. Antibiotic susceptibility and resistance of the Odontogenicmicrobiological spectrum and its clinical impact on severe deep space headand neck infections. Oral Surg Oral Med Oral Pathol Oral Radiol Endod, 2010; 110: 151-156.
10. Farmahan S, et al., A study to investigate changes in the microbiology andantibiotic sensitivity of head and neck space infections, The Surgeon (2014).
11. Juhlin L, Evers H, Broberg F, A lidocaine-Prilocaine cream 4. Olsen L, Englesson S, Evers H, An anesthetic lidmine/ prilocaine cream (EMLA) for epicutaneous application tested for cutting split skin grafts. Scand J Plat Reconstr Surg Hand Surg, 1985; 19: 201-9.5.