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What is World Pediatric Surgeons' Opinion on EMLA® Cream Induced Local Anaesthesia in Circumcision?

Dünya Çocuk Cerrahlarının Sünnette EMLA® Krem ile Oluşturulan Lokal Anestezi Hakkındaki Görüşleri Nedir?

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ABSTRACT

Objective: *Studies on neonatal pain are ongoing. Complications regarding the physiology of neonates, low GFR rate, limited drug use, methemoglobinemia, which is not found in other age groups lead to the search for safe drugs for painless operation. The idea that neonates do not feel pain has come to avoid pain caused by injection today. Therefore, EMLA® Cream, which is known to be effective with topical application, has become popular. Our study aims to reveal how the cream, which its analgesic effect is still doubted, is used by pediatric surgeons and to determine its common usage principles.*
Methods: *Many surgeons from every continent and many different countries were contacted via e-mail. The questionnaire, with few questions and limited choices, was completed by the physicians. The participants were kept anonymous and interaction among them was prevented. Upon 10% returns from the e-mails sent, the questionnaire was terminated and subjected to basic evaluation.*
Results: *The survey was completed in 107 women and 238 men, 345 participants. The results showed that 82 participants circumcised only using the cream and 91 surgeons who did not use the cream could use it in the future. The results also showed that 74.78% of the participants who avoided the cream had doubts about its pain prevention impact. The rate of avoidance of cream due to fatal side effects was 3.76%. According to the accommodation area of the participants, 36%-67% relied on the cream and performed neonatal circumcision.*
Conclusion: *Pediatric surgeons consider that the idea of neonates to feel pain is important and despite its positive effect on pain, the cream is not used by all pediatric surgeons around the world. Despite its local anesthetic effect occurring without injection, side effects or usage difficulties, the cream will still be popular.*

Keywords: *EMLA cream, circumcision, local anesthesia, pediatric surgeon*

ÖZ

Amaç: *Yenidoğanın ağrısı üzerindeki çalışmalar devam edegelmektedir. Yenidoğanın kendine göre olan fizyolojisi, düşük GFR hızı, sınırlı ilaç kullanımı, başka yaş grubunda olmayan methemoglobinemi gibi komplikasyonları; ağrısız işlem temini için güvenli ilaç arayışlarına sebep olmaktadır. Yenidoğan ağrı hissetmez düşüncesi, günümüzde enjeksiyon ağrısından kaçınma noktasına gelmiştir. Topikal uygulamayla etki gösterdiği bilinen EMLA, bu sebeple popüler olmuştur. Çalışmamızın amacı hakkında şüpheler olan EMLA kremin, çocuk cerrahları arasında nasıl kullanıldığını ortaya koyarak, ortak kullanım esaslarını belirlemektir.*
Yöntem: *Her kıta ve çok sayıda farklı ülke cerrahları ile e-posta (Mail) yoluyla iletişim kuruldu. Az sayıda soru ve sınırlı seçenek ile oluşturulmuş anketin, bizzat hekim tarafından doldurulması sağlandı. Katılımcıların kimlikleri gizli tutularak ve birbirleriyle etkileşim kurmaları engellendi. Gönderilen e-mail sayısının %10 kadar geri dönüşüm sağlanması üzerine anket sonlandırılarak temel değerlendirmeye tabi tutuldu.*
Bulgular: *107 kadın, 238 erkek 345 katılımcı ile anket çalışması tamamlandı. Katılımcıların 82'sinin sadece EMLA ile sünnet yaptıkları; EMLA kullanmayan 91 cerrahın gelecekte kullanabilecekleri sonucu elde edildi. EMLA'dan uzak duran %74,78 katılımcılarda, EMLAnın ağrıyı önleme gücü hakkındaki şüpheler olduğu ortaya konuldu. Fatal yan etkiler sebebiyle kremden kaçınma %3,76 oranında saptandı. Katılımcıların yaşadıkları bölgeye göre %36 ila 67 oranında EMLA'ya güvenerek yenidoğan sünneti yaptıkları saptandı.*
Sonuç: *Yenidoğanın ağrı çekme düşüncesi çocuk cerrahları tarafından önemsenmekte ve ağrıya olan olumlu etkisine rağmen dünya çocuk cerrahlarının tamamı tarafından kullanılmamaktadır. EMLA, enjeksiyon yapılmadan kullanılan lokal anestezik etkisini göstermesi, yan etkilerine veya kullanım zorluklarına rağmen popülaritesini sürdürmeye devam edecektir.*

Anahtar kelimeler: *EMLA krem, sünnet, lokal anestezi, çocuk cerrahı*

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Introduction

The belief of the physicians, including pediatric surgeons that neonates do not feel pain, which remained on the agenda by the 1990s, has reversed today and it is stated that acute pain of neonates will have reflections into their adulthood. The directives of reputable institutions such as AAP and EAU indicate that there are fatal complications due to interventions that cause acute pain. It is stressed that pain protocols should be prepared in advance, painless procedures should be chosen in case of any operation, precautions should be taken in case of any pain, and effective pain management should be continued as long as the painful stimulus continues. Therefore, not needing injection has been effective on topical EMLA® Cream (EC) to have a place in local anesthesia applications.

The surgical art that started as a master-apprentice relationship has now been gaining strength by interaction with close colleagues and transfer of experience. As circumcision, one of the oldest and most common surgical operations of the world, is not expected to be abandoned soon, the struggle with pain is predicted to be active effectively. This study aimed to contribute to reaching the common method among surgeons by determining how the widely used EC was perceived and practiced by pediatric surgeons around the world.

Material and Method

A survey was conducted with surgeons living in different parts of the world outside Turkey and stating that they did circumcision using local anesthesia. The surgeons were contacted via e-mail. A total of 330 participants were targeted in order that the main objective of the study would be statistically significant. The number of questions and choices was limited as much as possible to maximize the participant interest in the survey. Identities and e-mail addresses of the participants were kept confidential and the provided responses were not shared with other participants. Every participant had the right of filling out a single form. Direct contact was cared for using personal e-mail addresses. The first e-mail was sent in 2020. The accepted last return was in February 2021. With 345 returns to the approximately 2200 invitation e-mails sent, the required number of participants was reached, so the survey was terminated. As a source of the e-mail, and the address of the author with edu extension was used. The standard statistical evaluations were used. In the percentage calculations, the ratio to the general population was used.

The questionnaire sought the opinions of the participants about the use of EMLA cream in circumcision practices in the pediatric patient group. It was ensured that pediatric patients were included as the patient group. It was aimed to determine the trust of pediatric surgeons in the circumcision procedure by questioning the general views of the participants about the use of EMLA cream, its power in its pain relief effect and its use accordingly. Non-circumcision usage of emla was not included in the study.

The questionnaire was applied individually in order to minimize the interaction of the participants with each other and the sharing of e-mails of the participants was prevented. It was aimed to determine the general practice style of the relevant institution of each state outside Turkey and affiliated to the United Nations by preferring to communicate with the pediatric surgery educational institutions, preferably with the head of the institution,

Emla cream application method:
In order to determine the practice and confidence indexes of pediatric surgeons, the following questions were asked to be answered:

Information Note: It is aimed to measure the use of EMLA Cream only in circumcision patients. Application of more than one cream or applications other than circumcision are excluded. It is preferred that your patients are newborn or under 1 year old. It should be applied at least 60 minutes before the procedure, using supporting applications such as tegaderm that increase the effectiveness of the cream, covering the penis including the prepuce completely, making sure that the cream is not wiped off with urine or with a wet wipe after the cream is applied.
1. Do you use EMLA cream before starting the circumcision procedure under these conditions?

2. Do you circumcise only with EMLA cream?
3. Do you inject additional local anesthetic agents after making sure that the EMLA cream area is enough to wait?
4. Can circumcision be performed only with EMLA?
5. What is your reason for giving up or not using EMLA?
6. EMLA can be used for circumcision of which age group?
7. Do you recommend using EMLA cream only prior to local anesthetic injection?

Inclusion criteria

- The responses of the surgeons who used the EMLA Cream in accordance with the recommended practices in its prospectus were included in the study.
- To be applied to the prepuce at least 60 minutes before the procedure.
- Tegaderm application to ensure cream effectiveness
- Completely coverage of penis with EMLA cream
- Staying the Emla cream in the area application for long enough
- Cream is applied with a single application.

Exclusion criteria

- The responses of surgeons who did not use the EMLA Cream prospectus in accordance with the recommended practices in its prospectus were included in the study.
- Not being sure that the cream stays in the application area for 60 minutes.
- Conditions such as urine that sweep the cream from the environment
- Lack of supports that provide efficiency such as Tegaderm
- Not being sure that the penis and prepuce are adequately covered with cream.
- Conflicting answers between questions

Results

The data analysis started with responses of Nigerian pediatric surgeons, who do circumcision without anesthesia. Three Nigerian pediatric surgeons participating in the study cared for neonatal pain, prescribed painkillers to patients certainly and did circumcision not only through EC and provided answers that meant they could also use EC in the future [1].

The survey was completed with 107 women (31.01%) and 238 men (68.98%), 345 participants (Figure 1).

Of the participants, 82 (23.76%) did circumcision through EC only, 91 (26.37%) of 263 (76.24%) surge-

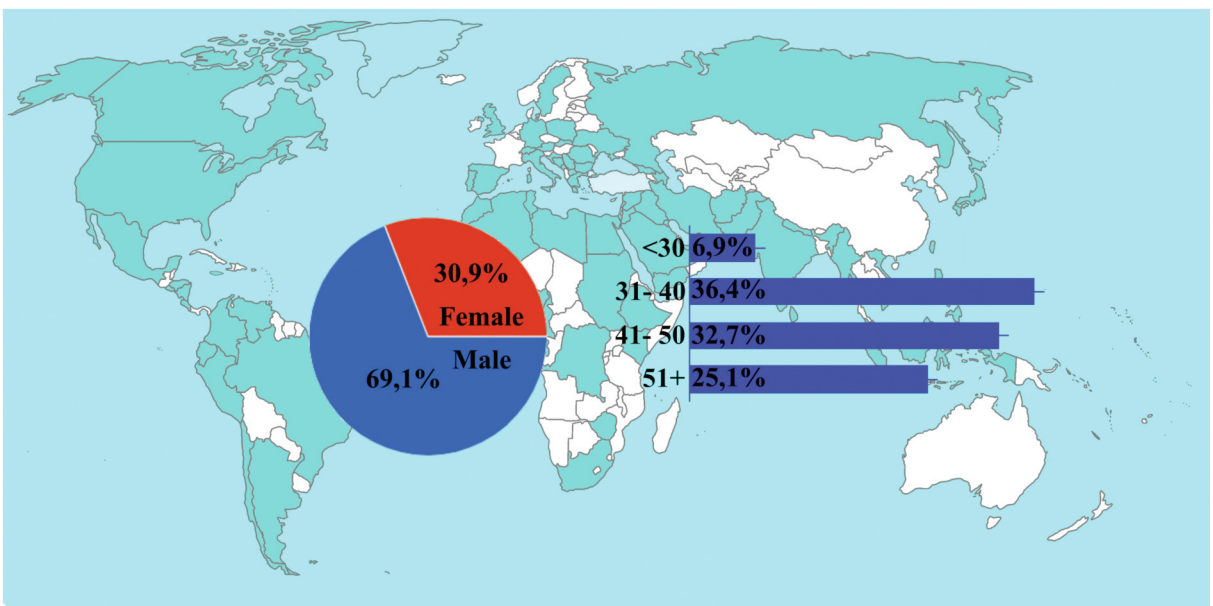

Figure 1. Attendees, gender and age distributions of the surgeons.

ons who did not use EC stated that they could use it in the future. Of those who did not use EC, 96 (27.82%) pointed to the long duration of the anesthetic effect, 13 (3.76%) to serious side effects, 12 (3.47%) to adverse skin effects and 64 (18.55%) to application and follow-up challenges. As the main reason for use, its ineffectiveness in relieving pain and the length of time to see the effect (74.78%) was reported (Figure 2,3).

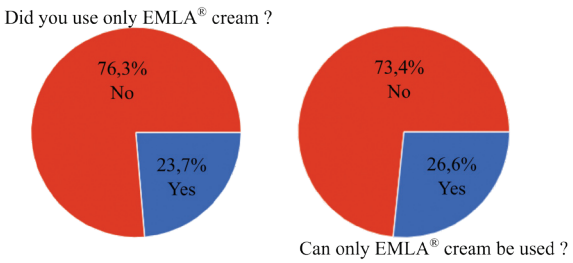

Figure 2. EMLA® cream and newborn relations.

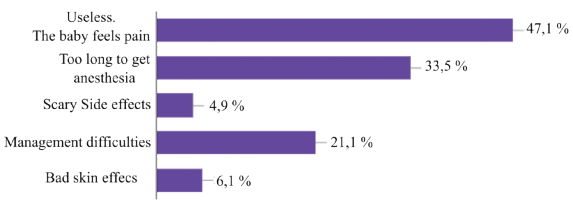

Figure 3. EMLA® cream should not been used because of.

Of those who thought that it could be used, 64 (18.55%) stated that EC would be suitable for all ages and 186 (53.91%) stated that it would be suitable for the neonates only.

Four out of 24 pediatric surgeons (6.95%) under the age of 30; 35 out of 125 (36.23%) aged 31 to 40 years; 22 out of 111 (32.17%) aged 41 to 50 years and 21 out of 85 (23.47%) aged 51 years and above stated that they used it. According to the age group variable, the rate of use was found to be the lowest in the age groups under 30 and over 50 years. Of those who used EC, 60 (17.39%) were men and 22 (6.37%) were women. According to the gender variable, 25.21% of males and 20.56% of female surgeons used EC.

According to the region where pediatric surgeons worked and the rates between them, the lowest use of EC was in North America (36.17%) and Europe (36.36%) while the most common use was in the Middle East (55.56%) and North Africa (67.31%). The participants from the Far East stated that they could use it in the future.

No data could be obtained from France, Australia and New Zealand where routine and ritual circumcision is not practiced and Turkic Republics and China where circumcision is common.

Discussion

The primary issue in circumcision is the pain today. Circumcision is a pain struggle and pain as well as the possibility of pain that a child may suffer is an important factor in the timing of circumcision. The probability of suffering pain may be a reason for giving up circumcision. Studies conducted with many different countries and age groups have shown that pharmacological pain management is necessary for circumcision for all ages and groups. It is doubtful that pain management with only sugared water in newborns is sufficient. The statement “neonates do not feel pain” has taken its place in history as an erroneous belief among physicians [2-4].

Circumcision and pain were covered by Labat in 1921, Rogerson in 1944, and Light S et al. [5] in 1955 in the Pubmed survey. These studies have stated that patients may feel pain despite local anesthetic interventions. During the preparation of this publication, there were 9 studies on circumcision in Pubmed in 2021, 5 of which focused on pain [6-12].

The place of EC in pain management was first defined and brought into question in 1982 and is still discussed in 2021. Such discussions are on the agenda as long as painful procedures exist [13,14].

Although EC has proved to have a local anesthetic effect, changes in absorption due to its topical nature and serious side effects may have caused it to be on the agenda and to be questioned [15-17].

Pediatric surgeons emphasize acute pain caused by circumcision and related complications. Considering the side effects of the agents to be used in the management of pain that patients will be exposed to during operations, it is understandable that surgeons

want to be on the safe side. In our survey, we observed that surgeons' avoidance of EC mostly arose from pain prevention problems. Hence, only 12 (3.47%) of the participants paid attention to skin reactions of EC. Serious side effects such as methemoglobinemia were reported to be effective in 13 (3.76%).

Conclusion

The EC cream is widely used around the world and its prevalence depends on the regions. EC is frequently used by pediatric surgeons around the world and it has proved to be a highly trusted topical agent even in acute pain. Considering the regions where circumcision is widely applied and its use is high, unacceptable levels of distrust have not been detected in any part of the world. The belief that injection pain can be avoided with a topical application is high among pediatric surgeons.

Further works

- Further multicenter studies with wider participants
- Conducting practical applications along with survey results
- Administering new questionnaires including more questions and choices
- Administering the study to pediatric surgeons in Turkey too
- Accessing regions where no data is obtained

Limitations

- Reluctance of participation in surveys in society
- The increase in the number of questions and choices distracts the participants from objectivity
- The presence of regions where no data are obtained
- EC: EMLA® Cream

Abbreviation

- EC: EMLA® Cream

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