

Reducing visual analog scale (VAS) in circumcision patient by the additional of topical anesthesia agent in local anesthesia procedures

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ABSTRACT

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Circumcision could be painful before, during, and after the surgery. The local anesthesia is often used in medical practice in order to reduce pain during circumcision. Topical anesthesia works by eliminating pain sensation after direct application on skin. This study aimed to investigate the effect of additional of topical anesthesia agent for circumcision on the visual analog scale (VAS). It was a cross sectional study using the data of medical records from a Circumcision Clinic (*Rumah Sunatan*) in Purwokerto, Central Java conducted from July 2019 to March 2020. As a result, there were 127 subjects (70.6%) belong to Mild Category VAS, while 26 subjects (14.4%) got Moderate, and 27 subjects (15.0%) fall under Severe Category. The application of topical anesthesia for circumcision could reduce the VAS value by 70.6 %.

ABSTRAK

Tindakan sirkumsisi dapat menyebabkan nyeri mulai dari sebelum, selama, dan sesudah tindakan. Penggunaan anestesi lokal sering digunakan dalam dunia kedokteran untuk mengurangi rasa sakit selama prosedur sirkumsisi berlangsung, salah satunya adalah anestesi topikal. Anestesi topical bekerja dengan mengilangkan sensasi nyeri setelah penggunaan secara langsung pada kulit. Penelitian ini bertujuan untuk mengetahui gambaran nilai *visual analog scale* (VAS) akibat penggunaan anestesi topikal pada sirkumsisi. Penelitian ini merupakan penelitian potong lintang menggunakan data rekam medis dari Rumah Sunatan di Purwokerto, Jawa Tengah yang dilakukan pada Juli 2019 sampai Maret 2020. Sebanyak 127 subjek (70,6%) termasuk VAS kategori ringan, sedangkan 26 subjek (14,4%) kategori sedang dan 27 (15%) masuk kategori berat. Penggunaan anestesi topikal pada sirkumsisi dapat mengurangi nilai VAS hingga 70,6%.

INTRODUCTION

Circumcision is a surgical removal or cutting activity of the partial or the whole foreskin penis. The frenulum of the penis can also be cut at the same time, so called frenotomy. The word circumcision comes from the Latin *circum* (to rotate) and *caedere* (to cut). This circumcision action may cause pain.¹

Pain is a condition in the form of unpleasant feelings that subjective for each person, since everyone has different scale or level and only that person can

explain the pain they feel.^{1,2} Fear and anxiousness often appear in children whom are managed to get circumcision, wherein 5% of them got feared to the needles. The fears of needle-stick might relate to their experience in past where the patient felt pain at the time of injection. Many strategies have been developed to minimize complaint related to the local anesthetic-procedures. One of the strategies is by using topical anesthesia. The topical anesthesia will only be effective in reduces pain when it was given prior to injection. Topical

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anesthesia is given to the injected area, wherein several studies shown it provides good result in pain elimination.³

Topical anesthetics are widely used in medical and surgical subspecialties. It works by relieve the pain sensation after directly contacted with the skin. The effectiveness of the topical anesthetics can be elevated by increases the concentration. Many various topical anesthetics are currently available in market, e.g. eutectic mixture local anesthetics (EMLA), ELA-max, lidocaine, epinephrine, tetracaine, bupivacort, 4% tetracaine, benzocaine, proparacaine, Betacaine-LA, topicaine, Lidoderm, and S-caine Patch.⁴ We reported here the effect of additional of topical anesthesia agent for circumcision on the visual analog scale (VAS).

MATERIALS AND METHODS

Design and protocol of study

This was observational study

with cross sectional design using data of medical records of patients who underwent circumcision in a Circumcision Clinic (*Rumah Sunatan*) in Purwokerto, Central Java from January 1st, 2016 to December 31st, 20218. Data of male children aged 8 to 12 years old were involved in this study. A total 180 respondents who met the inclusion and exclusion criteria were recruited.

Statistical analysis

Data were presented as frequency or percentage and analyzed descriptively.

RESULTS

Age distribution of the respondents were covering between 8 to12 y.o, with 12 y.o. as the median. About 23, 17.8, 21.1, 19.4 and 17.8% of the respondents were categorized as 8th, 9th, 10th, 11th, and 12th y. o., respectively (TABLE 1). All respondents have male sex.

TABLE 1. Age distribution of the respondents

Age (year)	Frequency (n)	(%)
8	43	23.9
9	32	17.8
10	38	21.1
11	35	19.4
12	32	17.8
Total	180	100.0

TABLE 2. The body weight distribution of the respondents

Body weight (kg)	Frequency (n)	(%)
1-10	8	4.4
11-20	72	40.0
21-30	71	39.4
31-40	20	11.1
41-50	6	3.3
>50	3	1.7
Total	180	100

The body weight distribution of the subjects were divided into 6 different group of clusters (TABLE 2). Group A (1-10 kg) is consisted by 8 respondents (4.4%). Group B (11-20 kg) is occupied by 72 respondents (40%). Group C (21-30 kg) is composed by 71 subjects (39.4%).

Group D (31-40 kg) and Group E (41-50 kg) are consist of 20 subjects (11.1 %) and 6 subjects (3.3%), consecutively. Those whom have > 50 kg of body weight (3 respondents, 1.7%) are included to the Group F.

TABLE 3. Respondent distribution based on VAS criteria

Body weight classification	Frequency (n)	(%)
Mild	127	70,6
Moderate	26	14,4
Heavy	27	15
Total	180	100

The body weight distribution will be scored between 0 - 10 following the VAS measurement (TABLE 3). According to the VAS classifications, only 15% of the respondents in this study belong to the heavy class. About 14.4% of them are classified into moderate category. While, surprisingly, more than 70% (most of the respondents) are belong to the light/mild body weight criteria.

DISCUSSION

This study aims to provide an overview of the VAS in circumcision due to topical anesthesia through local-anesthetic procedures. TABLE 3 shows the VAS scoring results with the light, moderate and heavy criterion. It is quite interesting, that the topical anesthesia for circumcision in this study mostly applied as a mild VAS category (70.6%). Several factors may play role to the low VAS score. Some of them are psychological condition, age, and weight.⁵⁻⁷ Another previous study done during the first stage of giving birth woman i.e. before and after the presence of the giving-birth-assistant. In that study, the pain level felt by the subject will be examined based on the physiologically measurement. Those whom were accompanied by the giving-birth-assistant experienced less pain

than the other. This leads to assumption that the psychological condition (i.e. calmer) might reduce pain sensation during the active phase of giving-birth process. In other word, it means that a good psychological condition may eliminate pain and influence the VAS score.^{8,9}

Age may also play role to the VAS score, since it is very close to the growth of the body. According to other study, the older of the respondents are linear to the size of the penis diameter of theirs ($p < 0,05$). In the present study, the age range of the respondents are covering between 8 - 12 y.o. As our finding, it was shown that the highest frequent of the lowest VAS score gained by the youngest age category (i.e. 8 y.o). In line with the previous other study, younger age of the subject may get smaller size of the penis diameter. As the consequence, this condition results a larger surface area of the skin-penis that would get direct contact to the topical anesthesia.^{3,10}

According to the TABLE 2, the most common body weight of the respondents was between 11-20 kg (40%). On the other hand, only 1.7 % of the respondents have weight more than 50 kg. On the other hand, the most frequent VAS score was observed at the mild category. Karita *et al*¹⁰ mentioned that the lighter of

a body weight result a smaller penis diameter ($p < 0.05$). The smaller of the penis diameter means the larger surface area of the penis skin to get contact by the topical anesthesia. Therefore, body weight might be an influential factor to affect the anesthesia, as well as the VAS score.¹¹⁻¹⁵ On contrary, the heavier of a body weight prone to get bigger size of its penis diameter thus make it less penis skin surface are to get contact with the anesthesia. In line with that study, in this research, we assume that the body weight of the subjects may influence the VAS score by which the size diameter of a penis is affected by the body size.

CONCLUSION

In conclusion, the additional topical anesthesia-agent in local anesthesia procedures can decrease the pain feeling in circumcision patients, proven by the high frequency of the mild VAS score i.e. 70.6 %.

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