CASE SERIES

Efficacy of common salt application on the umbilical granuloma in infants

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Abstract

The objective of this study was to determine the efficacy of the application of common plain salt for the treatment of umbilical granuloma in infants. The study design was descriptive case series and was conducted over a period of 12 months at the paediatric unit, Mardan Medical Complex, Mardan, Pakistan. For this study a total of 50 infants with clinically evident umbilical granuloma were selected. Application of a pinch of common plain salt was advised on the granuloma twice a day for three consecutive days. Outcomes in the shape of complete resolution of the granuloma, adverse effects, and recurrence of granuloma were assessed. The number of patients responding well to the treatment was 45 (90%). The treatment showed good response and there was not any adverse effect or recurrence. It was concluded that the common plain salt is a simple, effective, safe, and cheaper option for the treatment of umbilical granuloma in infants.

Keywords: Common plain salt, Infants, Umbilical granuloma.

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Introduction

Umbilical granuloma (UG) is commonly seen in neonates causing inflammation accompanied with discharge. The umbilical cord separates approximately after a week or 10 days following birth. When the cord is separated, there may be incomplete epithelialisation over the umbilical fibro muscular ring. This appears in red beefy tissues and its excessive growth leads to UG.

Although the cause is not very clear, there is infection due to delayed detachment of the cord, resulting in a pink coloured friable mass that develops as a result of inflammation in the umbilical base. It has no nerves so it is devoid of any sensation. Moisture and continuous drainage from the umbilicus are noticed by the parents who then report to the hospital. Although UG is not reported to regress spontaneously without treatment, some authors recommend only conservative observational management and no intervention.[1]

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This must remain under consideration that if UG if left untreated it could ooze and may present with continous irritation. The UG may get infected leading to omphalitis and necrotising fasciitis; UG is, therefore, taken as a clinical condition and requires treatment.

The prevalence of UGs is about 1 in 500 cases. A number of therapeutic treatments have been used and discussed in medical literature. These include chemical cauterisation either with silver nitrate or copper sulphate, double-ligature technique, electric cauterisation, cryocauterisation, and surgical excision. The most conventional among these are the use of 75% silver nitrate stick or solution for chemical cauterisation. However, there are safety concerns regarding the use of silver nitrate because if it is liberally applied it can cause minor burns on the adjacent healthy tissues. Moreover, silver nitrate needs frequent applications. Availability and cost are other related difficulties with silver nitrate use. Copper sulphate or alcohol wipes are also used for the same purpose. Schmitt[2] was the first to describe the use of common salt and its contracting effects for the treatment of UG and reported excellent response in granuloma management.[2] This was then discussed in 1983 with some detail by Kesaree[3] but neonatologists and midwives still show some reservations.[4,5]

The reason for this insufficient utilisation of common salt for UG, is the scarcity of data reported in books and journals. Silver nitrate is still recommended as the first line option by most principal textbooks on paediatrics and neonatology.[6,7] Hence, the best treatment modality is still unclear.

This study was therefore planned to find a simple, effective, safe and cheaper option for the treatment of umbilical granuloma in infants.

Case Series

This case series were collected over a period of 12 months, i.e. from January 1, 2021, to December 31, 2021, at the paediatric unit of Mardan Medical Complex, Mardan, Pakistan.

A total of 50 infants from both genders with clinically evident umbilical granuloma were selected from the outpatient department of paediatric unit through consecutive sampling. The first case included in this study

Table: Efficacy of common salt treatment for UG (n=50).

Efficacy	n (%)
Yes	45 (90)
No	5 (10)
Total	50 (100)

was reported on January 5, 2021 while the last case included was on December 22, 2021.

Application of a pinch (0.4 to 0.5 gm) of common plain salt (not pink salt or iodised salt) was advised on granuloma after cleaning it. Application was done twice a day for three consecutive days. To ensure that the salt remains at the desired place for at least 30 minutes it was covered with adhesive tape. Mothers were explained the method of application in detail. Follow-up visits after seven days and a final follow-up visit after one month were advised. Outcomes in the shape of complete resolution of the lesions, adverse effects and recurrences of granuloma were assessed.

Infants with surgical conditions that mimic UG, such as patent urachus or vitello-intestinal duct were excluded.

The data was analysed by SPSS version 25. Mean±Standard deviation was used for calculating age. Descriptive analysis was done by using frequency and percentage.

Written consent was obtained from all the parents of infants included in the study.

Permission for conducting the study was taken from the ethical committee of Mardan Medical Complex, Mardan.

Age of infants in this study ranged from 3 to 8 weeks with mean age of 5.64±1.66 weeks. There were 28(56%) male infants in this study while females were 22(44%).

Out of the 50 infants, common salt was effective in treating UG in 45(90%) patients. The frequency and percentage of efficacy are given in Table.

No adverse effect was observed in any of the patients. No recurrence was observed in the follow-up visit.

Of the remaining five patients who still had complaints for UG, three responded to topical steroids and antibiotics along with application of common plain salt. Topical steroids and antibiotics used in these patients were Hydrocortisone 1% and Fusidic Acid 2% (under the brand name of Fudic H) at 0.5 gm/dose (usually calculated on fingertips which is one fingertip application) twice daily for seven days along with common plain salt 0.4 to 0.5 gm/dose twice daily. The other two patients were referred to paediatric surgery.

Discussion

All the recommended treatment modalities including chemical cauterisation, cryocauterisation and electrocauterisation have curative effects but also carry their disadvantages. The same is true for surgical excision and granuloma ligation.[8]

A study published in 2016 reported that all infants who presented with UG had complete resolution using common salt in the five-day treatment period. Treatment was declared as simple, safe, and cost effective that can be performed at home by parents.[6] Jimish et al in 2019 reported complete resolution of UG when table salt was applied carefully and the lesion was occluded for 24 hours with adhesive tape. A three month follow-up was arranged which did not report any major complication or recurrence.[9]

A study published in the African Journal of Paediatric Surgery in 2021, reported a success rate of 96% in resolving this granuloma in 36 infants who were treated with application of common salt.[10]

In 2021, a systematic review of randomised controlled trials for studying the effects of topical treatments for UG reported that common salt resolved granuloma in >90% of infants in five studies, while resolved 54%–80% in two studies with excellent safety profile and no side effects.[11]

The results of the present study are also similar to the data published by others and mentioned above. The study observed a 90% cure rate in infants with age between 3-8 weeks (5.64±1.66 weeks) including both genders. No adverse effect was observed in any of the patients and no recurrence was reported in the final follow-up visit after one month.

The mechanism through which curative action of common plain salt on granuloma can be explained is its biological properties and desiccant effect. Common salt has high concentration of sodium ion that draws out water from the cells leading to the shrinkage and necrosis of the wet tissues.[12]

The procedure of salt application is not painful as there are no nerves in the granuloma, hence there is no sensation. The infant may, however, cry during this process because of being poked in the belly.[8]

On the basis of the results of this study and above discussion, it can be concluded that common plain salt has excellent results in the treatment of UG. It has no adverse effects or chances of relapse. Adding to the advantages, it is very easy to apply for the parents at home and easily available at very low cost.

Conclusion

It was concluded from the study that the common plain salt is a simple, effective, safe, and cost effective alternate option for the treatment of UG in infants. Being easy to apply and safe, it can be used by mothers at home.

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