

A comparative study: prevention of striae gravidarum in nulliparas utilising aloe vera cream v.s. cream base

Panja Jiropas*

Monthira Tankeyoon**

Jiropas P, Tankeyoon M. A comparative study: prevention of striae gravidarum in nulliparas utilising aloe vera cream vs. cream base. Chula Med J 1990 Nov; 34(11) : 851-857

A comparative study on the preventive effect in striae gravidarum of 10% Aloe vera cream and cream base was carried out in 155 nulliparas who attended the antenatal clinic at chulalongkorn hospital. Eighty-seven women used 10% Aloe vera cream and 68 women used the cream base. Both groups started the application of cream at 20 weeks gestation and continued until delivery. No significant statistical difference in the incidence of striae gravidarum was noted between the groups (44.83% VS, 47.06%). However, there was significantly less striae among those who used cream, when compared with those who did not use any cream (44.83% VS. 74.5%, 47.06% VS. 74.5%). Therefore the application of any cream may have some benefit in the prevention of striae gravidarum.

Reprint request : Jiropas P, Department of Obstetrics and Gynecology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.

Received for publication. December 22, 1990.

* Resident Department of Obstetrics and Gynecology, Faculty of Medicine, Chulalongkorn University.

** Department of Pharmacology, Faculty of Medicine, Chulalongkorn University.

ปัญหา จิโรภาส, มณจิรา ตันจักษ์เกตุร. การศึกษาเปรียบเทียบการป้องกันหน้าท้องลายในสตรีตั้งครรภ์ที่ไม่เคยคลอดบุตรระหว่างครีมว่านหางจระเข้ และครีมเบส. จุฬาลงกรณ์เวชสาร 2533 พฤศจิกายน ; 34(11) : 851-857

การศึกษาเปรียบเทียบการป้องกันหน้าท้องลาย โดยใช้ครีมว่านหางจระเข้ 10% กับครีมเบส ในสตรีตั้งครรภ์ที่ไม่เคยคลอดบุตร และ ไม่มีหน้าท้องลายมาก่อน ที่มาฝากครรภ์ในโรงพยาบาลจุฬาลงกรณ์ฯ โดยเริ่มทาครีม เมื่ออายุครรภ์ 20 สัปดาห์ จนถึงคลอด พบว่าผู้ใช้ครีมว่านหางจระเข้ 10% จำนวน 100 คน มีหน้าท้องลาย 44.83% ผู้ที่ใช้ครีมเบส 80 คน มีหน้าท้องลาย 47.06% ซึ่งความแตกต่างนี้ ไม่มีนัยสำคัญทางสถิติ แต่เมื่อเปรียบเทียบกับสตรีตั้งครรภ์ที่ไม่เคยคลอดบุตรที่ไม่ได้ทาครีมเลย พบว่ามีหน้าท้องลาย 74.5% ซึ่งมีหน้าท้องลายมากกว่าผู้ใช้ครีมว่านหางจระเข้ และ ผู้ที่ใช้ครีมเบสอย่างมีนัยสำคัญทางสถิติ

Pursuance of the Thai government's policy to stress self reliance within the frame work of the Sixth Economic and Social Plan included the scheme to develop the utilization of herbs as well as reports of the success of the application of Aloe vera cream for the treatment of wounds. The author hypothesised that Aloe vera cream is capable of preventing the occurrence of striae gravidarum.

Aloe vera cream is made up of many pharmacologically active ingredients. Scientific research supports the fact that Aloe vera cream possesses anti-bacterial properties, has antifungal effect and reports of its success in the form of jelly dated back from the year 1930 has been substantiated by its success in curing wounds arising from radiation and radium treatment. This prompted further study and extensive research on experimental animals.

In the year 1956 Alexander Farkas experimented by extracting jelly from fresh leaves and making a solution thereof which had a concentration of 0.2-10% of this chemical. He experimented on simple wounds and burns, and the result was faster wound healing. When a 5% solution was applied to the wounds, it dried within 2-3 minutes being transformed into a thin transparent layer which covered the wounds and prevented the entry of dirt and bacteria into the body. Subsequently in 1968 it was discovered that Aloe vera jelly contained a polysaccharide which had the property of wound healing.

Striae gravidarum are linear, depressed, atrophic, pinkish or purplish, scarlike lesions that later become white, occurring on the abdomen. They are caused by the weakening of the elastic tissue, and are associated with pregnancy. The reason for this has not been clearly established. However it is believed that striae may be caused by excessive stretching of the skin causing fibroblastic dysfunction. The raised level of estrogen and progesterone, the tearing of the skin and subcutaneous tissue, or perhaps the increase in other hormones in pregnant women especially corticosteroids which cause weakness of the connective tissue may all play a part.

It is found in 90% of pregnant women to varying degrees. There is no successful cure but it may be prevented by

1. Avoiding excessive weight gain.
2. Applying emollients to the skin such as lanolin, and cocoa butter creams. Massaging the abdomen may or may not help
3. Support the abdomen so as to not let it sag and overstretched.

The purpose of this study is to compare the

effect of Aloe vera cream and cream base on nulliparas in the prevention of striae gravidarum. If the result reveals that Aloe vera cream is capable of preventing striae gravidarum, the public would not have to be sorry about the expenses incurred in the purchase of such creams as advertised by the manufacturing companies.

Materials and methods

The study was conducted at the antenatal clinic at Chulalongkorn Hospital between May 15, 1987 and May 15, 1988. Nulliparans volunteers who wished to use the cream to prevent striae gravidarum were selected. The age range was from 16 to 40, with no striae gravidarum and no other complication such as pregnancy induced hypertension, twins or other excluding conditions such as:

1. reaction to the cream or develop a rash.
2. fail to put in an appearance after two consecutive mail or telephone notices.
3. later found to have twins or hydramnios.
4. if there is weight gain of more than 2 kilograms per week on two occasions.
5. abortion or premature delivery less than 36 weeks of gestation
6. other reactions out of the ordinary for which the doctors deem that the use of the cream be discontinued.

General physical examination was carried out at 20 weeks gestation. Weight and height measurements, Urinalysis for sugar and albumin content, blood pressure, pulse rate, fundal height, and to the fetal heart sound were made. A little cream was applied on the woman's arm. and if no reaction occurred after 2-3 minutes, she was included in the project. A diary card and one tube of cream was supplied to each volunteer. Each tube was identical in size (80g) and description. The tube which contained cream base composed of acetyl alcohol, wool fat, carbopol 940, stearic acid, propylene glycol and liquid paraffin, while the tube which contained Aloe vera cream composed of Aloe vera mixed with cream base 10%. The volunteers were advised to use one tube for 4 weeks by squeezing a 2cm. length of cream out of the tube using a measured hard paper as a guide. The output of the cream will be 1 cubiccentimetre and this is rubbed on the abdomen twice daily. Every time the cream was applied, a note was made on the diary card.

After 4 weeks, the women were again examined for weight, sugar and albumin content in the urine, blood pressure, fundal height and fetal heart sound. A new tube of cream in exchange for the old one, this was to check that the right application of the cream

were made as the tube should be totally empty if corrected used. However, if any residual cream was left in the tube, or if the cream had finished prior to the second visit, this meant that the application of the cream was not properly made. A note of this would be taken down and further instructions regarding the method of application would be given again. The diary card would be checked as to the accuracy of the applications.

At 28 and 36 weeks, and at delivery, data was collected to show whether striae gravidarum had been presented or not

Results

A total of 180 volunteers were randomly allocated into groups using the Fisher and Yates table. There were 100 in the Aloe vera cream group of which 13 were excluded in the data analysis for non-attendance at the second visit, and a further 6 for not taking the cream at the 3rd visit while one person was excluded for premature delivery before 36 weeks. The group which used cream base numbered 80 persons, with 12 being excluded; those because of adverse reactions, five who failed to turn up at the follow up visit 3 and 4 who did not receive the cream at the 2nd visit because they were not examined by the resident. This gave the

percentage of the total research of 13.89% which is acceptable in clinical trial research. The recommendation and examinations were made by 10 residents, but the interpretation of the results (to observe whether there is striae gravidarum or not) was carried out by the author alone.

The two treatment groups had a similar age distribution (table 1) most fell within the 16-25 year age group. Skin shades of both groups were also similar (table 2), with the largest group comprising of medium coloured skin, followed by light coloured skin while dark skinned were the minority. Educational level was similar (table 3), most had completed primary or secondary school. Housewives and employees formed the largest group attending the antenatal clinic at Chulalongkorn Hospital. Sampling showed that housewives received cream base more than Aloe vera cream, and government officers received Aloe vera cream more than cream base. Incomes from both groups were mostly in the 3,000-4,999 baht per month range. Average income of group 1 (Aloe vera group) was 5,160.43 baht and group 2 (cream base group) 4,506.88 baht. No data is presented for group 3 (did not use any cream at all) because the author needed only to know the incidence of striae gravidarum in nulliparas.

Table 1. Mean of age (years) of women in the Aloe vera cream user (group 1) and the cream base user (group 2) groups.

Age groups (years)	Group 1	Group 2
16-20	23	25
21-25	41	27
26-30	14	12
31-35	7	4
36-40	2	0
Mean	23.93	22.72

Table 2. Number and percentage of subjects' complexion in the Aloe vera cream user and the cream base user groups.

	Group 1		Group 2	
	Number	%	Number	%
Medium	68	78.16	56	82.35
Light	10	11.49	7	10.29
Dark	9	10.34	5	7.35
Total	87	99.99	68	99.99

Table 3. Number and percentage of the educational level of women in the Aloe vera and the cream base user groups.

Educational level	Group 1		Group 2	
	Number	%	Number	%
Non	4	4.60	2	2.94
1 school	52	59.77	43	63.24
2 school	16	18.39	14	20.59
College	10	11.49	6	8.82
University	5	5.75	3	4.41
Total	87	100.00	68	100.00

Chi-squared tests were carried out to determine whether there was a significant difference in incidence of striae between the groups. The tests showed that there was no significant difference between those using

Aloe vera cream and those using cream base (table 4). However, there was a significant difference in both groups when compared to women who did not use any creams at all (tables 5)

Table 4. Summary of Chi square test of striae and non-striae women in the Aloe vera cream user and the cream base user groups.

	Result		Total
	Striae present (Number)	Non-striae (Number)	
Group 1	39	48	87
Group 2	32	36	68
Total	71	84	155

Table 5. Summary of Chi Square test of striae and non-striae women in the Aloe vera cream user and the no treatment groups.

	Result		Total
	Striae present (Number)	Non-striae (Number)	
Group 1	39	48	87
Group 2	149	51	200
Total	188	99	287

Of the 155 volunteers divided into 2 groups, 87 used aloe vera cream and were designated as group 1; 68 used the cream base and designated group 2. Two hundred women received no treatment at all and were in group 3.

There was no significance statistical difference between the average age of group 1 (23.93) and group 2 (22.72) (Table 1). The subjects' complexion and

educational level were also no difference (Table 2 and 3). The most common occupation of the women in the two groups were housewife and employee. (Table 6) The mean income per month (Baht) of women in Aloe vera cream user and cream base user groups were 5,160.43 and 4,506.88. respectively, but this was of no statistical significance. (Table 7).

Table 6. Number and percentage of the occupation of women in the Aloe vera cream user and the cream base user groups.

Occupation	Group 1		Group 2	
	Number	%	Number	%
Housewife	32	36.77	29	42.65
Employee	38	43.68	29	42.65
Government officer	6	6.9	1	1.47
Banker	3	3.45	3	4.41
Merchant	8	9.20	6	8.82
Total	87	100.00	68	100.00

Table 7. Mean income per month (Baht) of women in the Aloe vera cream user and the cream base user groups.

Income/month (Baht)	Group 1	Group 2
500	1	4
500 - 999	—	—
1,000 - 1,999	5	4
2,000 - 2,000	18	13
3,000 - 4,999	34	29
5,000 - 9,999	22	15
10,000 - 14,999	6	3
15,000 - 19,999	—	—
20,000	1	—
Total	87	68
Mean	5,160.43	4,506.88

The comparative study on the preventive effect in striae gravidarum of 10% Aloe vera cream and cream base showed no significant statistical difference between the groups. This may be due to the sample size being less than that calculated, or the cream base may be capable of preventing striae gravidarum, or the 10% concentration of Aloe vera cream may not be enough to show the difference. The Aloe jelly is more effective than Aloe vera cream but it cannot be kept for more than 4 weeks. Aloe vera cream can be preserved for 2-3 months and longer if kept in the refrigerator. There was no difference in the color, odor and container of the Aloe vera cream and cream base so bias is reduced. The author hope to stimulate others to further investigate the prevention of striae gravidarum by Aloe vera jelly made from fresh Aloe vera trees that can be grown in Thailand.

The incidence of strea gravidarum in the 200 nulliparas who were in no treatment group (the following study) was 74.5%. There was significantly less striae when comparing the studied group with those who were in no treatment group (44.83% V.S. 74.5%, 47.06 V.S. 74.5%) therefore application of any cream may have some benefit in the prevention of striae gravidarum.

Conclusion

1. No significant statistical difference was found in the incidence of striae gravidarum between 10% Aloe vera cream users and cream base user groups.

2. The incidence of striae gravidarum in the 200 nulliparas who delivered at Chulalongkorn Hospital was 74.5%. There was significantly more striae when compared with the studied groups using Aloe vera cream and cream base.

References

1. Cherry SH, Berkowitz RL, Kase NG. Medical, Surgical, and Gynecologic Complications on Pregnancy. 3rd ed. Baltimore : Williams & Wilkins, 1985.
2. Prichard JA, MacDonald PC, Gant NF. Williams Obstetrics. 17th ed. Connecticut: Appleton-Century-Crofts, 1985.
3. DanForth DN, Scott JR. Obstetrics adn Gynecology. 5th ed. Philidelphia: J.B. Lippincott , 1986.
4. สุขิต เฝ้าสวัสดิ์, ศุภวัฒน์ ชุตินวงศ์, ดำรง เจริญประยูร, สุทัศน์ กลกิจโกวินท์. สูติศาสตร์. กรุงเทพมหานคร : ทริโอ แอ็ค, 2525.
5. Knuppel RA, Drukker JE. High-risk Pregnancy. Philadelphia: W.B. Saunders, 1986.
6. Pieraggi MT, Julian M, Delmas M, Bouissou H. Striae: morphological aspects of connective tissue. Virchows. Arch [Pathol Anat]1982 Aug; 396(3) : 279-89
7. Klein AD, Ponneys NS. Aloe vera. J Am Acad Dermatol 1968; 18(4):714-20
8. Grindlay-D, Reynolds-T, The aloe vera phenomenon : a review of the properties and modern uses of the leaf parenchyma gel. J Ethnopharmacol 1986; 16(2-3):117- 51
9. สุพจน์ อัครพันธุ์ธนกุล. ว่านหางจระเข้ สมุนไพรมหัศจรรย์ จากธรรมชาติ. กรุงเทพมหานคร: เอ็ดดิสัน เพรส โปรดักส์, 2527.
10. เตมศรี ชำนิจารกิจ. สถิติประยุกต์ทางการแพทย์. กรุงเทพมหานคร: โรงพิมพ์จุฬาลงกรณ์มหาวิทยาลัย, 2527.