

ODBORNÝ ČASOPIS DERMATOVENEROLÓGIE, ESTETICKEJ DERMATOLÓGIE A KOZMETIKY

DERMA



3. TISÍCROČIA

XI. ročník 1-2/2011

Effectiveness of CICATRIX® Cream
on Striae



EFFECTIVENESS OF CICATRIX CREAM ON STRIAE

Author: **Dr. Fernanda M. Pastrana Fundora MSc**

Co-authors: Dr. Edelisa Moredo Romo MSc, Dr. César R. Ramírez Albajés MSc, Director of CPENSAP (*Provincial Centres of the National School of Public Health*), University of Medical Sciences, Havana, Hana Zelenková, M.D., Ph.D., *DOST Svidník, Slovakia*

Summary

Introduction: Striae or stretch marks are common complaints among adolescents and young people as they are considered to be unsightly and unattractive. Nevertheless, a solution has yet to be found for this disorder.

Material and method: We carried out a Phase II clinical trial with 40 cases treated with Cicatrix cream at the Dermatology Service at the Hospital Pediátrico Docente Juan Manuel Márquez in Havana during 2009 and 2010. The main evaluation criteria was the stretch marks disappearing and then secondly, the decrease in size and changes in the appearance of the skin lesions and any adverse effects.

Results: 92% of the patients responded well and only 8% responded badly. 100% of Caucasians responded satisfactorily. One of the patients had a rash in the treated area, so the treatment was stopped.

Conclusions: We consider Cicatrix cream to be an excellent alternative to treat stretch marks.

Key words: Striae, Stretch marks, Cicatrix

Introduction

Striae are also called striae distensae, stretch marks, striae alba, etc. They are real scars that form when the connective tissue is stretched intensely and gets damaged; the connective tissue network rips, it loses elasticity and compactness. This is precisely what causes the wound and promotes the formation of the exudate, which can leave scars if it is deep enough. (1) (2)

One of the main reasons why young people and adolescents turn to the doctor for help is because stretch marks are anaesthetic. Sometimes this problem can affect them psychologically too, limiting their social behaviour and upsetting their daily lives. It is a major concern among young people, an age group in which the appearance of striae is most common. (3) (4) (5) (6)

The dermis is the main component of the skin and its function is to provide a matrix that is strong enough to support the numerous structures it contains (blood vessels, nerves and appendages). It mainly consists of very stable fibres, in particular collagen and elastin.

Collagen stands for about 80% of the dry weight of adult skin. It has great tensile strength and it stops the skin ripping when it is stretched. The elastin stands for almost 5% of the dermis and it is a binding protein that maintains the skin's normal tension. Lastly the fibroblast, which is the cell that synthesizes all the components from the matrix —collagen, elastin and the extra cellular matrix. (1)

If the skin cannot expand fast enough when it is stretched with the sudden and progressive weight gain caused by certain physiological conditions experienced in life, stretch marks form. Nowadays, apart from the mechanical element that causes stretch marks, genetic, endocrine, metabolic, neurophysiological and biochemical factors that trigger off or promote their formation have also been identified. The skin's elasticity is genetically conditioned. (7) (8) (9)

The metabolic endocrine factor is considered to be determinant. (9) (10) The release of adrenocortical hormones and estrogens that are typical in certain situations determine the appearance of stretch marks (puberty, pregnancy, treatment with glucocorticoids, athletes taking anabolic steroids). This increases or retains

water in the tissue that is stretched thus weakening the collagen and elastin fibres. Estrogens stimulate the production of cortisone (3) (9) (4) (8) and stress also negatively affects the body's balance. (11)

Stretch marks can form in lines or bands, separately or in groups in areas where there are large folds of skin. They are formed in two stages: The initial inflammatory stage where pinkish or purple line appears. Medicine administered at this stage is intended to hydrate and increase the affected areas' elasticity to withstand the mechanical stretching. The most well known treatment is **Centella asiatica extract**, that improves the appearance and the development of the stretch marks, the collagen and elastin hydrolysate, hyaluronic acid, placental extracts and vitamins A, B, C, D, E, that regenerate, protect and moisturize the skin. Then occurs the scarring stage, when the stria looks pearly white. At this stage the disorder is more difficult to solve. Different therapy is used: topical retinoids, glycolic acid or other hydroxy acids, tretinoin combined with other skin cell stimulants, dermabrasion, mesotherapy, embryonic extracts, laser therapy, radio frequency and also the *Centella asiatica*, which is considered to be a bio-stimulant and its healing power is known to promote the tissue repair process. (12) (13) (14) (15) Many products are used (sweetbriar oil, horsetail extract, alchemilla extract, milk thistle, wheat germ, soya...) in the attempt to find a solution to a common complaint which is more of an aesthetic problem than a medical one. (16) (17) (18) (19) (20) (21)

Cicatrix cream made by Catalysis Laboratories in Madrid is a product designed to treat stretch marks, keloids, wounds and epidermal burns.

The different products used as treatment all over the world have no more than a 50% effectiveness rate, unlike Cicatrix cream whose effectiveness, according to the directions for use from the manufacturer, surpasses 50% thanks to the product's mechanism of action. This means that this treatment could obtain a better response than other conventional treatment administered up to now. Its main ingredient is *Centella asiatica*, which stands for 1%, and *Pinus sylvestris* (0.5%).

Centella asiatica: It contains triterpenic substances, asiatic acid and madecassic acid. Its main functions are:

1. It stabilises the production of collagen fibres whenever there is an imbalance, an excess, lack or are disorganised.
2. It promotes the healing process by stimulating the reticulohistiocytic system and the vascularization in tissue.
3. It adjusts the connective tissue in keloids, hypertrophic scars and burns.
4. It promotes the synthesis of collagen in the walls of the blood vessels and it preserves skin colour.
5. It produces changes in the fibroblasts. This function is extremely important because the fibroblasts must be stimulated to enhance the ability of the dermal elastic fibres. By providing the essential elements, the macromolecules from the dermal extracellular matrix are then synthesized. Cellular stimulants, such as the asiaticoside in the *Centella asiatica* extract, are used to stimulate the fibroblastic activity. This substance has a triterpenic structure and it has been used for years to stimulate the mitosis and to heal different types of wounds. Its mechanism of action is based on stimulating the production of fibroblasts, collagen fibres and elastin. Asiaticoside is also known to have an antagonistic effect on the corticosteroids, probably because they have similar chemical structures.
6. It also has an antagonistic effect on the corticosteroids.

Centella asiatica plays an important role in preventing stretch marks (odds ratio 0.41, CI 95% 0.17 to 0.99). (8)

Pinus sylvestris is another component of the cream. The essential oil is used topically; it stimulates and reddens the skin. It's epulotic, it heals, it strengthens blood vessels, it's an anti-inflammatory. Moreover, it is used to treat acne and it has antiseptic properties. (20)

The objective of this clinical trial is to evaluate how effective Cicatrix cream is to treat stretch marks by distinguishing the population under analysis, and determine whether it has any adverse effects.

MATERIAL AND METHOD

Patients

A Phase II open clinical trial was carried out at the Hospital Pediátrico Docente Juan Manuel Márquez (Havana) to determine how effective the Cicatrix product (cream) is to treat stretch marks. Patients from all over the country were studied. Research work started in September 2009 and ended in December 2010. The striae were clinically diagnosed as being pinkish or pearly white lineal lesions, that varied in colour (depending on how old the stretch mark in question was), that were located in the usual areas: trunk, back, breasts, inner thighs and arms and pelvic girdle. 40 patients aged between 10 and 18 of both genders took part in the clinical trial. Patients who had some type of allergy or hypersensitivity to any of the components in the product, or who stated that they did not want to take part in the trial, were uncooperative and whose parents or guardians were not interested, were excluded.

Ethics

The clinical trial was carried out pursuant to the principles established in the Helsinki Declaration. It was approved by the ethics committee and the scientific board from the Hospital Pediátrico Juan Manuel Márquez. All the patients signed the informed consent form agreeing to take part in the research programme. The clinical trial was registered on ClinicalTrials.gov (NCT0-1018212) and in the Cuban Public Registry of Clinical Trials RPCEC.00000090.

Organizing the clinical trial

After the initial examination, the patients who had satisfied the eligibility criteria were then included in the clinical trial. The procedure involved applying the Cicatrix cream themselves 3 times a day for 4 months. The cream is applied topically; it is rubbed on so that a fine film covers the whole affected area, as shown in the demonstration given by the specialist in the initial and check-up sessions. Cicatrix (cream) is made by Catalysis, S. L. (Madrid, Spain) and it contains: 1% Centella asiatica and 0.5% Pinus sylvestris, which are the main ingredients.

All the patients were examined at the start of the clinical trial and then every four weeks. The examination included the number and characteristics of the stretch

marks, details of any adverse events and photos of the striae at the start and end of the treatment.

Number of stretch marks: Response was considered to be excellent when the lesions were no longer visible after 4 months of having administered the treatment; good when 50% of the striae had disappeared; normal when less than 50% had disappeared and bad when the symptoms had not changed at all.

Secondary efficacy variables

The length of the stretch marks (*measured in centimetres*): Good was considered to be when they decreased by more than 50%; normal when they decreased less than 50% and bad when they were the same and had not changed at all.

Adverse reactions: The adverse reactions were observed when the product was applied.

Statistical analysis

The basal characteristics of the patients were summarised by means of absolute frequencies and percentages for the categorical variables. All the patients that had applied the cream at least once were included in the evaluation of the results (*ITT analysis*).

The response assessment was summarised by means of using absolute frequencies and percentages.

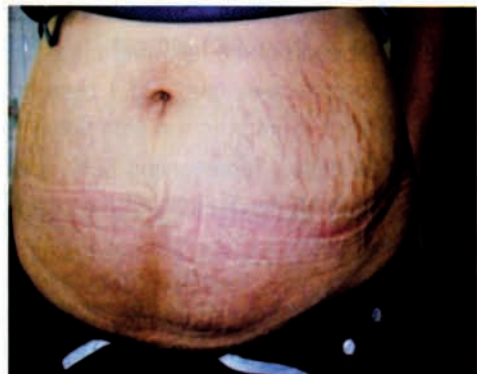
The safety analysis included all the patients who had used the product at least once.

The clinical trial was designed to include 40 patients.

All the tests carried out were two-tailed with a 5% significance level. The statistical analysis was carried out using the SPSS Inc. for Windows, version 15, Chicago, IL.

RESULTS

The Phase II clinical trial was carried out on 40 people that satisfied the inclusion criteria. As the cases were organised according to age: 25% (10 cases) aged between 10 and 13 and then 75% (30 cases) aged between 14 and 17. Females predominated the clinical trial, 75% (30 patients) were female, and 25% (10 patients) were male.



As for skin colour 87.5% of the population (35 patients) were Caucasians, 5% (2 patients) were half-caste and then 7.5% (3 patients) were black.

In terms of location, the striae seemed to be most noticeable on breasts, this was the case of 32.5% of the population (13 cases), then 15% (6 cases) had them on their thighs, 12.5% (5 cases) on their back, 4 cases on their pelvic girdle, 3 on their abdomen and then there were 2 cases for each of the following areas: buttocks, knees, legs and preaxillary line, and 1 case had them on their arms. With regards to the time taken for them to appear, in 24 cases, representing 60%, it was less than a year and in 16 cases, 40% of the population, it was more than 1 year.

As for the number of stretch marks, 45% (18 cases) had 11 or more, 32.5% (13 cases) had between 6 and 10 stretch marks, and finally 22.5% (9 patients) had less than 5.

After studying the progress of the cases over the 4 months of treatment, a satisfactory response was observed in 36 cases, being 90% of the population, and a bad response in 3 cases, which represents 7.5% of the population, in which there were no variations in the lesions. 1 case had contact dermatitis that looked like an erythematosus rash in the whole area where the product had been applied. The symptoms of this disappeared within 48 hours of having stopped the treatment and this patient was then removed from the clinical trial.

In the 36 cases of satisfactory progress, 5 had an excellent response (12.5%), 19 had a good response (47.5%) and 12 had a normal response (30%).

There were no significant results for the time taken for the striae to develop. The skin phototypes I and II had better results in which 100% (35 cases) that received treatment had satisfactory results, in 24 cases (70%), the stretch marks disappeared completely or more than 50% of the striae, whilst none of the 3 black patients had a satisfactory response (*only 1 of them had less than a 50% improvement*) and 50% or one of the two half-castes did not respond to the treatment at all.

The level of satisfaction was 100%, seeing as even the patients whose stretch marks did not change obser-

ved an improvement in their general skin condition in terms of moisturization and hydration.

DISCUSSION

A Phase II clinical trial was carried out with 40 cases diagnosed as having striae, whereby Cicatrix cream was applied according to the planned methodology, and in 90% of the cases had a satisfactory response. Previous studies on this type of therapy in adults showed that 70% of the cases responded satisfactorily, which is much less than the percentage obtained in the younger patients, in which the best response was seen to be among Caucasian children. Other authors have obtained similar results in which they highlight race as being an important factor along with this pathology's gene expression, and they note that striae is most common among adolescents and young pregnant women in particular. (3) (4) (5) (8) (9) (10) (23) It is seen to be predominant in females. Our results are similar to those obtained by other authors that point out that stretch marks are probably more frequent in females due to the hormonal influence and also because women are more concerned about the aesthetic appearance of striae (24) (25). Findings from Sison and Larsson obtained similar results with regard to gender and age. They point out that 35% of adolescents aged between 10 and 16 get stretch marks, and they are 2.5 times more prevalent in girls than boys.

More recently, Larsson and Lidén obtained a 27% incidence of striae among adolescents in which twice as many girls as boys were seen to be affected. Chan (8) found that 77% of those affected in his study were girls.

In 36 cases that had satisfactory results, 5 of the patients (12.5%) had an excellent response in which the stretch marks disappeared 100%, 19 cases had good results where more than 50% of the striae disappeared and 12 cases had a normal response in which less than 50% of the striae disappeared.

Stretch marks in Caucasian patients were clearly predominant representing 87.5% (35 cases) of the whole population. 5% (2 cases) were half-caste and then 3 cases (7.5%) were black. Chan points out how the predilection of races is statistically important with regards to the formation of stretch marks (8). The res-

ponse in the Caucasians was 100% satisfactory in the cases that completed the treatment, 70% of which was excellent and good and the remaining 30% was normal, whilst the only 50% of the half-caste population and 33% of the black population had a satisfactory response. There were no significant differences among the patients with regard to the location of the stretch marks and, although the satisfactory response were clearly higher among the Caucasians, this was not significant either seeing as there were very few half-caste and black skinned cases included in the population. The most common location, namely breasts and back, coincide with the findings of other authors, although some authors state that the buttocks is the most common area. (8)

CONCLUSIONS

The topical application of Cicatrix (cream) aesthetically improved the appearance of the affected areas on the treated patients, mainly among the Caucasians (Fitzpatrick skin type I and II), and with it their quality of life also got better, so it is a good therapeutic alternative.

BIBLIOGRAPHY

1. Colodrón M., Rostro F, Castelo-Branco Cl, Durán M, Piel y terapia hormonal sustitutiva Ginecología y obstetricia clínica, ISSN 1695-3827, Vol. 6, Nº. 4, 2005, pags. 191-200 5 .
2. Zelenková, H.: Striae Cutis Distensae and the therapeutic opportunities. Cosmetic Medicine, 31. Jarh-gang, 2010, ISSN 1
3. Atwal GS, Manku LK, Griffiths CE, Polson DW.: Striae gravidarum in primiparae. Br J Dermatol 2006; 155(5):965-9
4. Cho, S., Park, E. S., Lee, D. H., Li, K., Chung, J. H.: Clinical features and risk factors for striae distensae in Korean adolescents. J Eur Acad Dermatol Venereol 2006; 20(9):1108-13.

5. Carreras, M.: Las Estrías y su Prevencion Matronas Prof. 2007; 8 (1): 20-22 tes Coreanos. J Eur Acad Dermatol Venereol 2006; 20(9): 1108_13
6. Cordeiro, R.C., Zecchin, K.G., de Moraes, A.M.: Expression of estrogen, androgen, and glucocorticoid receptors in recent striae distensae. Int J Dermatol 2010.
7. Muzzo, S. B., Rosales, R. E., Miranda, P. I., Yates, B.I., Passeron, P. A.: Características de la hipoglucemia incidental en niños Rev.Chil. Nutr. Vol. 34 (3) Sept. 2007.
8. Chang, A. L. S., Agredano, Y. Z., Kimball, A. B.: Risk factors associated with striae gravidarum. L Am Acad. Dermatol. 2004; 51: 881-5.
9. Ghasemi, A., Gorouhi, F., Rashighi-Firoozabadi, M., Jafarian, S., Firooz, A.: Striae gravidarum: associated factors. J Eur Acad Dermat. Vener. 2007; 21(6):743-6.
10. White, Pollyanna Alves Secundo, Gomes, Rosana Caetano, Adriana Clemente, Larisa de Paula, Adriana Da Silva: Galvanic-puncture effects in stretch marks treatmen . Fisioter. Bras; 9(1):53-58, jan-fev 2008.
11. Misticone, S., Piquero, V.: Peeling de Acido Retinoico 7% en estrías cutáneas: Una Opción Terapéutica. Dermatología Venezolana. Vol. 45, Nº 1, 2007.
12. Montoya, L., Pichardo, P., Velazquez, P., Hojyo-Tokoma, M. T., Domínguez C. J.: Evaluation of Subcision as a treatment for cutaneous striae. Drugs Dermatol 2005; 4 (3); 340_50.
13. Meyer, Patricia Foes; Morapws, Francisco Wilker do Campo, LimA, Daniel Araujo Freire de; Ronzio, Oscar; Carvalho, Maria Goretti Freire: de Adaptation of galvanotherapy in tattoo machine for striae treatment. Fisioter. Bras;10(3):176-180, Maio-Jun. 2009.
14. Kim, B. J., Lee, D. H., Kim, M. N.: la Canción KY, Cho WI, Lee CK, Kim JY, Kwon OS, J Clin Dermatol. 2008;9(1):33-7.
15. Ba H, Kim, B. J, Lee, W.J., el Golpe J.S., Lee S.Y., Choi J. H., Chang, S. E: Dermatol Surg El tratamiento de estrías de distension con el photothermolysis fraccionario. 2009 Aug;35(8):1215-20.

16. Young, GL, Jewell, D.: Cremas para evitar las estrías del embarazo (Revisión Cochrane traducida). En: La Biblioteca Cochrane Plus, número 2, 2005. Oxford, Update Software Ltd. Disponible a: <http://www.update-software.com>. (Traducida de The Cochrane Library, 2005 Issue 2. Chichester, UK: John Wiley & Sons, Ltd.).

17. Tay YK, Kwock C, Tan E.: Non ablative 1,450 nm diode las White, Pollyanna Alves Secundo, Gomes, Rosana Caetano, Adriana Clemente, Larisa de Paula, Adriana Da Silva: Galvanic-puncture effects in stretch marks treatment. *Fisioter. Bras*; 9(1):53-58, jan-fev 2008
er treatment of striae distensae. *Lasers Surg Med* 2006; 38 (3): 196_9.

18. Kang, S.: Topical tretinoin therapy for management of early striae *J Am Acad Dermatol* 1998; 39: 590_2.

19 Jimenez, G.P., Flores, F., Berman, B., Gunja Smith, Z.: Treatment of striae rubra and striae alba with the 585-nm pulsed-dye laser *Dermatol Surg* 2003, 29 (4):362-5

20. Elson, M. L.: Treatment of striae distensae with topical tretinoin *J Dermatol Surg Oncol* 1990, 16: 267-70

21. González, T. J, Rodríguez, R. R, Machado, P. M., González, Q. G, Cabrera, S. J., Heridas: Métodos de tratamiento MEDISAN 2004;8(1):33-42

22. Ammar, N. M., Rav, B., Schwartz, R. A, et all.: Adolescent Striae. *Cutis* 2000, 65-70

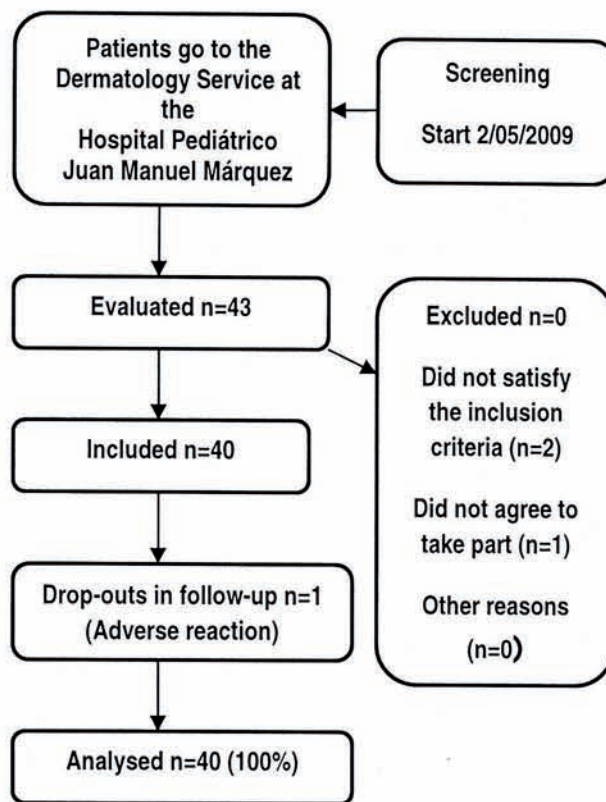
23. Roizen, G., Vicky; Araya, B., Irene; Faivovich, K., Daniela; Roizen, G., Gigia: Physiological and pathological cutaneous changes during pregnancy: study in 227 pregnant women *Rev. chil. dermatol*; 25(4):344-351, 2009.

24. Arroyave, Luis Fernando; Ramirez, Ana Catalina; Velásquez, Carolina; Manrique Hernández, Rúben Darío: Factores de riesgo asociados a estrías atróficas en mujeres adolescentes de un colegio privado, Medellín, 2003

25. Maia, Marcuon, Carolina Reato; Sarita Bartholomei; Carolina Reato; Rodrigues, Sarita Bartholomei; Aoki, Tsutomu. Striae distense in pregnancy: risk factors in primiparous women *An. brás. Demmatol*;84(6):599-605, nov. dic 2009

Flowchart

Treating stretch marks with Cicatrix Cream



Dr. Fernanda M. Pastrana Fundora MSc

Head of the Dermatology Service

Hospital Pediátrico Docente Juan Manuel Márquez

First and Second Degree Specialist in Dermatology

Teaching Assistant and Consultant

Assistant Researcher

fpastrana@infomed.sld.cu