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Case report

Different Therapeutic Modalities in a Patient with Multiple Spontaneously Developed Keloids – A Case Report

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A B S T R A C T

Keloids are benign tumors that usually develop as an excessive healing response to injury. They remain a challenging therapeutic problem to this day. Numerous treatment approaches are available, yet therapeutic results are often not satisfactory. A female patient with multiple spontaneously developed keloids on her trunk is presented. In this patient, four different therapeutic options were employed at different sites, with variable responses. The first option included cryotherapy, with poor effect. Slight flattening was observed after intralesional corticosteroid therapy. Treatment with excision followed by radiotherapy resulted in recurrence after 3 months. The best effect was noticed when excision and injection of corticosteroids into surgical margins were followed by radiotherapy. To the authors' knowledge, this is the first report of three-modal therapy in the management of keloids, which resulted in no recurrences over a 3-year follow-up.

***Key words**: keloids, excision, intralesional corticosteroids, radiotherapy*

Introduction

Keloid is a benign, well-demarcated area of fibrous tissue overgrowth, which may occur after injury or other skin lesions. In contrast to hypertrophic scars, keloids extend beyond the border of the initial defect[1]. Keloid formation is influenced by both local and inherited factors. The earlobes, chin, neck, shoulders, upper trunk, especially presternal region, and proximal parts of extremities are the most commonly affected sites. These anatomic areas are susceptible to increased skin tension[1,2]. Afro-Caribbeans and individuals of Mediterranean descent are more prone to develop keloids than other populations. The occurrence of keloids may also run in families[3].

Most keloids appear within a year after local trauma, for example after surgery, burns, vaccination and acne vulgaris. However, the patients sometimes have no recollection of prior injury[1,4]. Such »spontaneous« keloids may be the result of an unnoticed microtrauma and are usually refractory to various treatments[5].

The pathogenetic mechanisms that cause keloids are still unclear. A number of abnormalities in cellular function were observed, such as proliferation abnormalities, apoptosis, expression of growth factors and extracellular matrix proteins. Recent studies suggest that single genes may act as major regulators of keloid development[6]. Initially, keloidal scars are raised, firm, pink or red plaques that may grow for months or years. The surface becomes smooth and shiny with the color of alabaster. It is often indolent and painful on pressure[1].

The major histologic changes usually occur in the lower dermis. Large, unencapsulated nodules of densely packed, irregularly arranged, coarse, and homogeneous collagen bundles are observed. In keloids of recent onset, the number of fibroblasts is increased. Elastic fibers are largely absent[7].

To date no method of treatment for keloids has proved fully satisfactory due to the high rate of recurrence. Treatment options include intralesional steroids, compression therapy, fractionated soft x-ray radiotherapy, cryotherapy, silicone gel sheeting, interferon, laser therapy, and surgical excision. Combined therapies involving various agents have also been tried, such as intralesional steroid injection or radiotherapy following surgical excision[8–11].

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Case Report

A healthy 41-year-old woman presented to our Department with multiple irregularly shaped, firm, hyperpigmented keloids on her trunk (Figure 1). Their size varied from 1.5 to 6 cm in diameter. The first keloid occurred 23 years before, after variola vaccination, at the site of inoculation, i.e. on her left shoulder. In the same year, excision of the keloid was performed, soon followed by a recurrence. Three years later, new keloids appeared spon- taneously on her back. Later, every few years a number of new keloids developed on the patient's trunk without previous injury. Her family history revealed no occurrence of keloids in her relatives.

Before she was examined at our Department, she had received 15 treatments with cryotherapy using cotton-tipped method of liquid nitrogen application at one-month intervals, without therapeutic effect.

On admission, laboratory testing produced normal complete blood count and chemistry findings. We used three therapeutic options for the lesions on her trunk. On the back, two excisions were done. After both excisions, the diagnosis of keloidal scars was confirmed by histology. The first excision on the patient's back was followed by fractionated soft x-ray radiotherapy initiated on the day after excision and then every other day, with a daily dose of 200 cGy, total dose of 1000 cGy. Radiotherapy was accompanied by compression bandage. After three months, a slight recurrence was observed. In this lesion we continued intralesional application of triamcinolone acetonide crystalline suspension 10 mg, diluted 1:3 with xylocaine, every 3 weeks. After three months, one half underwent atrophy, while the other half partially regressed (Figure 2, marked with asterisk).

Fig. 1. The patient's back before treatment.

Fig. 2. The patient's back three years after treatment. The asterisk denotes keloid recurrence after surgical excision followed by superficial radiotherapy. The arrow shows normal scar after keloid excision, followed by corticosteroid application into surgical margins and radiotherapy.

The second keloid was located in her lumbar region. After excision, triamcinolone acetonide crystalline suspension 10 mg, diluted 1:3 with xylocaine, was injected intradermally into the wound margins. After one day, fractionated soft x-ray radiotherapy started, with a daily dose of 200 cGy, administered every other day to a total dose of 1000 cGy. The wound showed normal healing. The sutures were left in place for 10-14 days since the use of intralesional corticosteroids would interfere with the normal rate of scar development. There were no signs of recurrence during the 3-year follow-up (Figure 2, marked with arrow).

Smaller keloids were treated by intralesional corticosteroids as monotherapy. Triamcinolone acetonide suspension 10 mg, diluted 1:3 with xylocaine, was used at 3-week intervals over 3 months. Some of the keloids showed partial, and none complete flattening.

Discussion

Therapeutic management of keloids is still a challenge, since the results of treatment are usually unsatisfactory. There is no universally efficacious treatment, and numerous treatment modalities have been attempted, often with disappointing results. Traditionally, these included the use of cryotherapy, intralesional corticosteroids, or pressure therapy. The best results were often achieved by combining different invasive methods such as cryotherapy, surgery, intralesional corticosteroids, laser or radiotherapy[8,9].

Cryosurgery has been used alone or in conjunction with injections of corticosteroids. Rusciani et al. report flattening of 70% of keloidal scars after cryosurgery monotherapy, with pigmentary disturbances in all cases[10]. Hirshowitz et al. examined the use of cryotherapy with concomitant intralesional application of triamcinolone acetonide. Although this therapeutic combination led to complete regression in 70% of study patients, the true success of this therapeutic approach was difficult to evaluate because they were not able to determine the rate of recurrence[11]. Monotherapy with intralesional corticosteroids can also produce partial or full flattening of keloidal scars, especially of smaller lesions. As surgical excision of keloids shows a high rate of recurrence, it is usually used with adjunctive therapies such as intralesional corticosteroids or radiotherapy[8]. A study of Tepmongcol involving the use of radiation with or without surgery suggested there would be no benefit of preoperative irradiation of keloidal scars[12]. Sclafani et al. carried out a prospective study to compare the effects of postoperative radiotherapy and corticosteroid injections, and found no statistically significant difference[13]. In the available literature, we found no data on combining intralesional corticosteroids and radiotherapy after surgical excision in the same lesion.

Our patient spontaneously developed multiple keloids, although the first keloid occurred at the site of variola vaccination. This event may be considered as a precipitating factor for the first lesion, but the causes of subsequent multiple keloids remained unclear. According to some authors, spontaneously developed keloids are more likely to be refractory to various treatments[5].

When our patient presented to our Department, she had a history of 15 cryotherapy sessions, without any effect. We decided to perform different therapeutic options to different sites. In addition to monotherapy with intralesional corticosteroid injection, we decided to employ two combinations of different methods. In one lesion, we performed surgical excision followed by superficial radiotherapy, and after 3 months we noticed the first sign of recurrence. Although partial regression occurred after intralesional application of corticosteroids to recurrence lesions, the result was not satisfactory.

Therefore, we decided to treat the other keloidal scar by a combination of surgical excision, intradermal injection of corticosteroids into the wound margins prior to final wound closure, and subsequent fractionated soft x-ray radiotherapy beginning from the second postoperative day. It was our own therapeutic protocol modification, which included a three-modal treatment, to our knowledge not yet described. This therapeutic option proved fully successful and in this case most efficacious as the patient remained free from any sign of recurrence at 3-year follow-up. However, the efficacy of this method has to be proved through the prospective controlled study in future.

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RAZLIČITI TERAPIJSKI PRISTUPI U BOLESNICE S VIŠESTRUKIM SPONTANO NASTALIM KELOIDIMA – PRIKAZ SLUČAJA

SAŽETAK

Keloidi su dobroćudni tumori koji obično nastaju nakon ozljede, kao posljedica neprimjerenog tkivnog odgovora pri cijeljenju. Radi se o promjenama koje u današnje vrijeme još uvijek predstavljaju terapijski problem. Iako su na raspolaganju brojne terapijske mogućnosti, rezultati liječenja obično nisu zadovoljavajući. Opisuje se bolesnica s višestrukim, spontano nastalim keloidima na trupu. Četiri terapijska pristupa su primijenjena na različitim keloidima u iste bolesnice, s različitim terapijskim odgovorom. Krioterapija kao prvi terapijski pristup nije dovela do zadovoljavajućeg

učinka. Intralezijskom primjenom kortikosteroida postignuta je djelomična regresija promjene. Keloid koji je liječen ekscizijom i potom radioterapijom ponovno se je pojavio nakon tri mjeseca. Najbolji rezultat je postignut kombinacijom ekscizije, intralezijske primjene kortikosteroida u rubove operacijskog reza i zatim radioterapije. Prema saznanjima autora, ovo je prvi opis trimodalnog terapijskog pristupa u liječenju keloida, nakon kojeg nije nastao recidiv tijekom trogodišnjeg praćenja bolesnice.