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Successful treatment of recalcitrant keloid – a combined approach

Sir, keloids are the result of an overgrowth of dense fibrous tissue that usually develops after healing of a skin injury. The tissue extends beyond the borders of the original wound, does not usually regress spontaneously. Although the basis for keloid formation has not been fully delineated, an imbalance of matrix degradation and collagen biosynthesis resulting in excess accumulation of collagen in the wound have been postulated to be the primary biochemical features of keloidal lesions.[1,2] Fibroblasts of keloidal lesion produce increased amount of collagen per cell compared with normal fibroblasts.[3] There are no set guidelines for the treatment of keloids. Treatment has to be individualized depending upon the distribution, size, thickness, and consistency of the lesions and association of inflammation.[4] Treatment modalities for keloids and hypertrophic scars include compression garments, radiation, excision, intralesional injections, cauterization, cryotherapy, laser surgery, and silicon gel dressings. We report a case of recalcitrant keloid treated successfully with a new combined approach.

A 21-year-old male driver, presented with asymptomatic, solid, raised lesion on the skin over the dorsal aspect of right first metacarpal and thumb since past 5 years. There was history of minor accidental trauma at the site of lesion. Cutaneous examination revealed single well-defined, oblong, stony hard, non tender keloidal growth on the skin involving dorsal aspect of right first metacarpal and thumb (**Figure 1**). The surface was smooth and devoid of hair follicles. Systemic examination and routine blood investigations were within normal limits. We initially planned to give intralesional corticosteroid injections. The lesion was so hard that it was very difficult to insert the injection needle and push the drug intralesionally. We tried topical potent corticosteroid cream and cryotherapy using liquid nitrogen to soften the lesion. But the patient could not tolerate the pain due to cryotherapy and also developed blister. After 1 month, since there was no improvement in the consistency of the lesion, we decided to go for debulking of the stony hard fibrous tissue with the help of radiofrequency surgery under local anaesthesia followed by intra- and post-operative intralesional injection of corticosteroid triamcinolone acetonide. Small area of hard fibrous tissue was debulked initially (**Figure 2**) followed by complete debulking of remaining tissue (**Figure 3**). Initially we injected 40 mg of triamcinolone acetonide injections intralesionally, one just after debulking and other after 3 weeks. Then we injected 10mg injections intralesionally once in 3 weeks for 3 sessions. Gradually the lesion healed up without any major complication. At the end of 3 months, the

Figure1 Single well-defined, oblong, growth on the skin involving dorsal aspect of right first metacarpal and thumb.

Figure2 Partially debulked stony hard fibrous tissue.

Figure3 Healed partially debulked hard fibrous tissue with complete debulking of remaining tissue by radiofrequency surgery.

result of the combined procedure was very encouraging with almost 100% clearance of the lesion (**Figure 4**). The patient was then given intermittent injections of 10mg triamcinolone acetonide once in 2 months (two such injections) only at the margins which

Figure 4 3 months post-operative - completely healed flat skin.

Figure 5 6 months post-operative – completely healed flat skin with small area of hypopigmentation.

showed minimal regrowth (**Figure 5**). Since past 6 months we have not given intralesional steroid and the patient was asked to come for follow-up once in 2 to 3 months. The only complication seen in our patient was small area of hypopigmentation which was acceptable to the patient as compared to the bulky, hard and cosmetically disfiguring keloidal lesion.

Discussion

Brissett and Sherris state that all treatment protocols are individualized, but the standard approach to keloids and hypertrophic scars begins with corticosteroid injection followed by surgical excision, pressure dressing and long term follow up.[5]

Very often it is difficult to force the injection into the hard mass of keloid. This problem could be overcome by softening the lesion either with cryotherapy, or pulsed dye laser or by addition of hyaluronidase, or topical application of immuno-modulator like imiquimod.[6]

Chowdri *et al*.[7] treated 58 keloid and hypertrophic scars 58.62% of which were recurrent. Each lesion was subjected to surgical excision with intra-operative local injection of triamicinolone acetonide, followed by repeat injection of the same drug at weekly interval for 2-5 weeks depending on the symptomatic relief in all patients within 5 week of surgery. Objective response in terms of no recurrence was noted in 91.9% of patients with keloids, and 95.24% of patients with hypertrophic scars at a mean follow up of 30.5 months. Local or systemic complications were insignificant.[7]

Radiofrequency surgery is the cutting of tissues using a high frequency alternate current. It can simultaneously cut and coagulate tissues without applying any pressure. The principle of radiofrequency is that it uses high frequency radiowaves to deliver low temperatures through radiofrequency electrodes. The tissue serves as the resistance instead of the electrode so that there is no heating of the radiofrequency electrode by the use of low temperature radiowave energy. Instead, the intracellular tissue water provides the resistance and vaporises without the heat and damage seen in electrosurgery. This tissue vaporisation also results in significant haemostasis without actually burning the tissue. Advantages of radio-surgery are controlled and minimal lateral tissue damage, rapid tissue healing time, minimal or bloodless operating procedure, less operating time and most importantly it's an OPD procedure.

Intralesional injection of corticosteroid (triamcinolone acetonide 10 mg/40 mg) has always remained the first line treatment for keloids. Steroids are known to inhibit collagen synthesis and possess anti-inflammatory properties. Atrophy, one of the side effects of steroids, is utilized to achieve therapeutic effect in keloids. Multiple injections in the keloid bulk at intervals of 4 to 6 weeks are required to achieve desirable effect.

A combination approach using different therapeutic options seems to give the best results.[5,6,7] In our case, we combined two different methods to treat recalcitrant keloid. Due to the hard fibrotic nature of tissue, it was not possible to inject the drug with ease to achieve desirable therapeutic effect. Patient was not responding to topical corticosteroid therapy and cryosurgery to soften the tissue. We did the debulking with the simple and inexpensive Indian radiofrequency instrument. Debulking of the tissue can be done by surgical excision with scalpel blade, but the disadvantage is that, it is associated with intraoperative bleeding and very high recurrence rate. Various lasers like carbon dioxide laser, erbium:YAG and pulsed dye laser can be use for debulking, but those are not cost-effective. In our case, tissue debulking was followed by intralesional corticosteroid injections to inhibit collagen synthesis and to prevent recurrence.

In conclusion, radiofrequency surgery in combination with intralesional injection of corticosteroid (triamcinolone acetonide 10 mg/40 mg) is an effective and probably the treatment of choice for recalcitrant keloids and hypertropic scars. But further study with more number of patients is required.

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