Keratoacanthoma arising after site injection infection of cosmetic collagen filler

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A B S T R A C T

INTRODUCTION: Over one million treatments in more than 40 countries have been administered Zyplast implants. Infections at collagen implant sites have occurred in fewer than one per thousand treated patients.

PRESENTATION OF CASE: We present a case report of a 27-year-old man; he developed a severe granulomatous reaction in the site of resolvable collagen filler injection Zyplast, and one month later developed a cutaneous nodular lesion. Histological examination of the lesion revealed Keratoacanthoma (KA) with surgical margins free of tumor. We performed two surgical corrections within a period of six months on multiple hypertrophic skin scars of the face. Two years after the last excision, the patient continued to be free of any recurrence.

DISCUSSION: Keratoacanthoma (KA) is a benign skin tumor with a quick growth pattern but may regress spontaneously. Though the exact etiology of KA is uncertain, it is found to be more frequent in elderly people, on photo-exposed skin areas and cutaneous infection site. Bovine collagen intradermal injections, though catabolized over the time in the patient, can raise several complications already described in technical literature, but we want underline that cutaneous infection near filler injection site can develop KA as described in our case report.

CONCLUSION: KA must be considered as a new local unforeseeable complication of bovine collagen injection to fill facial soft tissue when occurred a face cutaneous infection. We believe that radical excision is the golden standard.

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1. Introduction

Over one million treatments in more than 40 countries have been administered Zyplast implants. Rigorous clinical trials, to determine the safety and efficacy of Zyplast collagen implants, were conducted from 1976 to 1981. This data was submitted to the Food and Drug Administration and Zyplast implants were cleared for marketing in 1981 and 1985 respectively. Collagen implants are indicated for the correction of contour deficiencies of soft tissue, mainly as filler for facial imperfections. A collagen implant is a sterile device composed of highly purified bovine dermal collagen that is lightly cross-linked with glutaraldehyde. They have been employed successfully in many areas of the body to correct distensible acne scars, atrophy from disease or trauma, glabellar frown lines, nasolabial folds, or defects due to rhinoplasty, skin graft or other surgery, and other soft tissue defects. Four weeks prior to the procedure, Collagen Test Implant is injected intradermally into the volar forearm to determine if a patient demonstrates sensitivity to the implants. Laboratory results have shown that ninety-seven percent of men and women tested can be treated with Zyplast implants. Collagen implant therapy must not be initiated if the patient has a positive response to the required Collagen Test Implant.

2. Presentation of case

This case report describes a 27-year-old, caucasian patient, who developed a skin nodule in sites of the Zyplast filler injections one month post treatment. The young patient resulted negative in the Collagen Implant Test. About one month after the implant test, he began the Zyplast injections. Seven months after the injection, the patient was submitted to another injection of the same bovine collagen to increase his soft facial tissue. Eight days after the last injection filler, the young patient developed an inflammatory reaction of the soft facial tissue along with edema and pain syndrome. He developed an inflammatory reaction in all injected sites simultaneously. The systemic symptoms resolved after 20 days of anti-inflammatory and antibiotic therapy.

A physical examination 30 days after the last injection of the filler showed: circular nodular skin lesion (thickness 0.6 cm) diameter 4.5 cm, in the right nasolabial fold; irregular nodular skin lesion with important edema, in right maxilla region; ellipsoid nodular...
skin lesion (thickness 1 cm), diameter 5 cm, in the left nasolabial fold; circular nodular skin lesion, diameter 1.2 cm, in left maxilla region (Fig. 1). After two months, another nodular lesion developed in the right cheek. This nodule was excised with wide margins. Histological examination of the lesion revealed Keratoacanthoma (KA) with surgical margins free of tumor. After 2 years the patient was recovered into our department. The physical examination of the face showed (Fig. 2): hypertrophic irregular scar in right cheek near nasolabial fold (Fig. 3), hypertrophic scar in right maxilla region, hypertrophic irregular scar in left cheek near nasolabial fold, atrophic linear scar in left maxilla region. We performed two surgical corrections within a period of six months on multiple hypertrophic skin scars of the face. Two years after the last excision, the patient continued to be free of any recurrence (Fig. 4).

3. Discussion

With the increase in products available and the rise in the number of patients seeking this type of intervention, it is crucial that both the physician and the patient are fully aware of the risks involved with each product. Adverse reactions to bovine collagen implants occur in a small percentage of treated patients. These reactions resolve, for the most part, with time as the host reabsorbs the implant material. Sometimes these reactions take weeks to months to develop after the injections, and may result in induration and/or scar formation. Also, in less than one in 1000 treated patients, systemic complaints consisting of nausea, rash, headache, joint aches, or difficulty in breathing have been reported. Bovine collagen intradermal injections, though catabolized over the time in the patient, can raise several complications already described in technical literature, but we want underline that KA can be considered as a new local complication of bovine collagen injection to fill facial soft tissue when occurred a face cutaneous infection in site of injection in some patient, as dimostrented in this case report. All patients who want to undergo this treatment must be previously informed about any possible, permanent complications they could run into, but above all that clinical experience with injectable collagen implants was not available prior to 1976, and the safety of this product for a longer duration is not known.

Infections at collagen implant sites have occurred in fewer than one per thousand treated patients, and reactivation of a pre-existing herpes simplex infection at implantation sites has been reported in fewer than one per ten thousand patients. These responses resolved quickly and without sequelae. These reactions take weeks to months to develop after the injections and may result in induration and/or scar formation. Local necrosis is a rare event, which has been observed following collagen implantation. Most necroses reported through post-marketing surveillance have occurred in the glabella. Systemic complaints have been reported by fewer than 0.5% of collagen implant patients. As a result, two rounds of skin testing are required adding inconvenience and delay for both the practitioner and patient. Furthermore, a negative skin test does not guarantee allergic reactions or other more serious side effects will not occur.

KA is a skin tumor that typically presents with a history of rapid growth over a short period of time in people aged 50 and older. Sir Jonathan Hutchinson first described it in 1889 as “crateriform ulcer of the face”. Rapid growth over a period of 1–2 months, size of 1–2 cm, and spontaneous involution after 3–6 months is typical. Etiology of this tumor is controversial. The theory that KA of the skin and well-differentiated squamous cell carcinoma are part of the same disease entity is not new. In the before literature, a lot of
publications show the arising of KA after sun exposure, UVB phototherapy, radiotherapy, cryotherapy, cutaneous infection site, and immunosuppressive virus, but in recent years there has been an increasing number of reports of KA arising at sites of trauma. A causal relationship between keratoacanthoma and a variety of preceding traumatic events has been postulated in the literature. We believe that an early complete excision is the treatment of choice for all skin neoplasms supposed to be KA.

4. Conclusion

We are in agreement with the new Zyplast’s “collagen implant physician package insert”, concerning the use of filler upon examination only at least two “collagen test implant” to evaluate compatibility with patients who have never experienced bovine filler. We suggest at least one more compatibility test should be performed before every treatment for all patients formerly treated with this filler. It is reasonable to prophylaxis subject the patient to antibiotic after filler injection. Our patient was atypical for his young age and the circumstances that produced his KA. We suppose that intense exposure to inflammatory stimulus by cutaneous infection in the sites of collagen injection predisposes the development of KA. We propose radical excision of a KA developed in the infected site injection of cosmetic filler. The result of the surgical reconstructions in this young man has definitely improved the patient’s condition, though the patient is certainly dissatisfied with the indelible signs on his face from the local complicated adverse reaction to the resorbable filler.

Conflict of interest statement

None.

Funding

None.

Ethical approval

The patient, that is the subject of our study, donated his consensus to scientific treatment and publication of his clinic situation and images. We have obtained written consent from the patient and that we can provide this should the Editor ask to see it.

The Director of Plastic Surgery Unit, Prof. Francesco D’Andrea, agreed authorization to send you this case report

Author contributions

Brongo S. has contributed to the plan of the study design, he has operated the patient as first surgeon.

Moccia L.S. has written this paper, has executed data analysis and data collections, he has operated the patient as aid surgeon.

Nunziata V. has contributed to data collections, he has operated the patient as aid surgeon.

D’Andrea F. has contributed to the plan of the study design and the correction and direction of study.

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References

7. Pattee SF, Silvis NC. Keratoacanthoma developing in sites of previous trauma: a report of two cases and review of the literature. Journal of the American Academy of Dermatology 2003;48(February (Suppl. 2)).