

# Foreign body granuloma after nasolabial folds injected with a new generation hyaluronic filler

## ABSTRACT

Nowadays, dermal fillers are used in aesthetic medicine very often, hence, a large number of complications after hyaluronic acid products application may occur. Upon early diagnosis and adequate treatment, almost any adverse reaction can be avoided. Proper injection technique, approved products and detailed anatomical education decrease the risk of long-term sequelae. Herein, a clinical case of foreign body granuloma formation in the area of nasolabial fold after injection of hyaluronic filler is described. A short overview of the pharmacodynamics and possible side effects of the injectable hyaluronic fillers is also presented.

**KEYWORDS:** *Hyaluronic acid fillers, Foreign body granuloma, Complication*

## INTRODUCTION

A wide variety of dermal fillers is now available in the cosmetic dermatology practice for soft tissue augmentation. Hyaluronic acid (HA) fillers are the most popular products, used for temporary restoration of lost volume. HA is a linear polysaccharide composed of repeating disaccharide units of glucuronic acid and N- acetylglucosamine.<sup>1</sup> Over the past several decades, various forms of HA fillers have been developed; they differ in many aspects: the type and degree of cross-linking, extrusion force, total HA concentration and skin bio availability.<sup>2</sup> Unfortunately, with the expanding usage of dermal fillers, the frequency of complications after injection arises. The adverse reactions can be divided into four categories: 1. mild and severe; 2. early and delayed<sup>3</sup>; 3. product or technique related; 4. inflammatory and non-inflammatory. Biofilms, plaques and nodules formation, abscess and cellulitis, foreign body granuloma, vascular occlusion are some of the most common complications.

Herein, a case of foreign body granuloma arising 3 months after HA injection is described.

## CASE REPORT

A 48-year-old Caucasian female presented with painful, red lesions in the area of the nasolabial folds. The symptoms started 3 months after the injection of 2 ml HA product using a new cross-linking technique, "CLH-advance 2, 25mg HA/ml" in the middle face, applied by a beautician. On clinical examination, well-defined, tender erythematous nodules in the area of nasolabial folds with diffuse swelling and focal accumulation of pus were seen (Fig.1). The laboratory findings showed leucocytosis with neutrophilia (white blood cells-14.23; normal ranges: 3,5-10,5; and granulocytes - 9,77; normal ranges: 1,56- 6,13). The skin biopsy revealed deep dermal inflammatory infiltrate consisting of epithelioid cells, multinucleated giant cells, and neutrophils around amorphous mucinous artificial material, consistent with foreign body granuloma reaction (Fig.2).

Bacterial swab proved negative. Methylprednisolone 40mg /24h, combined with Metronidazole 2 x

500mg/24h and Clindamycin 2 x 600mg/24h was introduced with fast improvement in the following ten days. On the 14<sup>th</sup> day a 1:1 mixture of triamcinolone and lidocaine was injected intralesionally, combined with application of 300UI of hyaluronidase. At the 2-week follow-up visit the nodules were reduced in size, the fluctuation disappeared, and non-intensive post-inflammatory hyperpigmented macules marked the zones of previous intervention (Fig.3).

## DISCUSSION

Since injection of synthetic fillers for soft tissue augmentation is increasing over the last decade, profound knowledge of facial anatomy is vitally important for proper technique application. Aseptic conditions critically minimize the risk of complications. Appropriate patient and product selection should not be underestimated<sup>4</sup>.

All types of fillers for soft tissue augmentation can cause adverse reactions. They can be categorized according to time of onset, severity, and cause<sup>5</sup>. Granulomatous reactions generally have a delayed onset after filler injections, appearing as red papules, plaques or nodules with a firm consistency, which may result from fibrosis in late stages. If fluctuance is present, an infectious etiology must be ruled out.<sup>6</sup>

Foreign body granuloma is a chronic inflammatory reaction that entraps a foreign body to prevent its migration. The reaction occurs due to the immune system inability to enzymatically degrade or phagocytose foreign body material<sup>7</sup>. Foreign body granuloma can occur after the injection of dermal fillers, showing various clinical and histological features depending on the type of injected filler. It can evolve months and years after the application of HA products in the soft tissue. Unfortunately, the pathogenesis still remains unknown. There are three clinical and histological types of foreign body granulomas. Collagen and HA products may cause cystic granulomas, which can result in a sterile abscess. Permanent injectable fluid like silicone can cause edematous granulomas. Particulate injectables like “Sculptra” or “Artecoll” may cause sclerosing granulomas<sup>8</sup>. The case presented features epithelioid and multinucleated giant cells admixed with neutrophils as markers of evolving inflammation. This mixed infiltration is always seen in early stage of foreign body granuloma.

Vycross technology uses a combination of both low- and high-weight HA molecules, which results in a highly well-shapeable crosslinked gel that safely forms microspheres “pearls” or a jelly<sup>9</sup>. This technology also provides less swelling and less pain during the application. Injection of synthetic fillers for soft tissue augmentation is increasing over the last decade.<sup>10</sup> Despite greater safety and comfortability of vycross products in comparison with hyalcross fillers, adverse reactions do occur. Herein, we confirm the possibility of unexpected granuloma formation upon application of this new generation HA fillers.

The treatment of foreign body granulomas must stop inflammatory cells invasion and proliferation. Systemic steroids and antibiotics, followed by application of intralesional steroid or hyaluronidase can lead to a complete resolution of the skin lesions<sup>11</sup>.

## CONCLUSIONS

The reported case illustrates severe complications after the injection of 2ml HA dermal filler by an unqualified injector without medical degree, proving evidence that the best treatment of choice for foreign body granuloma formation is prevention. The experts of filler injection must be familiar with each filler material, the injection techniques, and the potential complication. Despite the HA fillers improvement, complications are still possible. Collecting and sharing adverse reactions experience is important to improve our knowledge and develop consistent, effective protocols.

## REFERENCES

1. Sudha PN, Rose MH Beneficial effects of hyaluronic acid *Adv. Food Nutr. Res.* 2014;72 :137-76
2. Tezel A, Fredrickson GH The science of hyaluronic acid dermal fillers *J. Cosmet. Laser Ther.* 2008;10: 35-42
3. Hyun J, Kyun D Treatment algorithm of complications after filler injection *J Korean Med Sci* 2014; 29: 176-182
4. Lee J, Kim Y Foreign body granulomas after the use of dermal fillers: pathophysiology, clinical appearance, histologic features and treatment *Arch. Plast Surg.* 2015; 42: 232-8
5. Cutan J Fillers: Contraindications, side effects and precautions *Aesthet Surg* 2010 3 Jan-Apr; 3(1): 16-19
6. Lemperle G, Gauthier-Hazan N, Wolters M, Eisemann-Klein M Foreign body granulomas after all injectable dermal fillers *Plast. Reconstr. Surg* 2009;123: 1842-63
7. Fund D, Pavicic T Dermal fillers in aesthetics: an overview of adverse events and treatment approaches *Clin. Cosmet. Invest. Dermatol.* 2013;6:295-316
8. Lemperle G, Gauthier-Hazan N, Wolters M, Eisemann-Klein M Foreign body granulomas after all injectable dermal fillers *Plast. Reconstr. Surg* 2008;123:1864-18734
9. Micheels P, Sarazin D, Tran Ch Effect of different crosslinking technologies on hyaluronic acid behavior *JDD* 2016; 15:5
10. Manafi A, Barikbin B, Hamedi Z Nasal alar necrosis following hyaluronic Acid injection into nasolabial folds: a case report. *World J Plast Surg* 2015;4 :7 4-8
11. Kim JH, Ahn DK, Jeong H, Suh S. Treatment algorithm of complications after filler injection: based on wound healing process. *J Korean Med Sci* 2014; 29: 176-182.

## LEGENDS

Fig.1 Well-defined, tender, fluctuating erythematous nodules in the nasolabial folds

Fig.2 Foreign body granulomas around amorphous mucinous artificial material

Fig.3 Post-inflammatory hyperpigmented macules at sites of former granulomas

Fig.1



Fig.2

UNDER PE

4

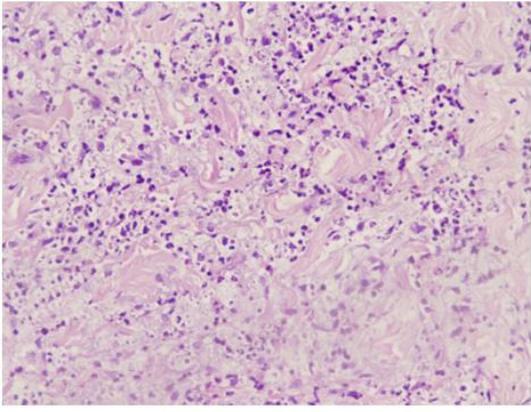


Fig.3



UNDER