



## CORRESPONDENCE

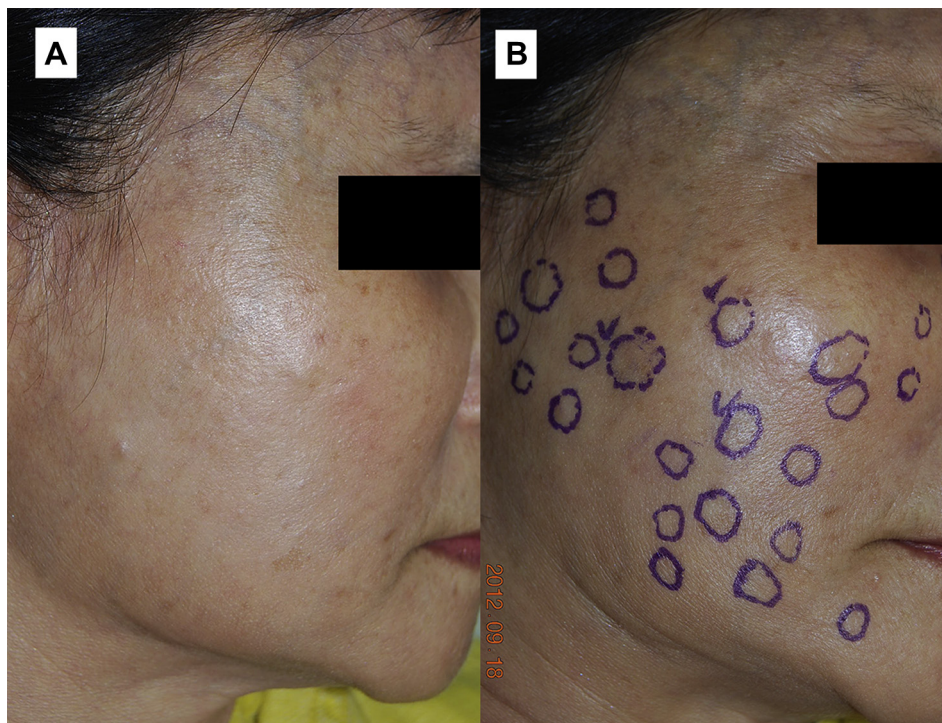
## Multiple subcutaneous granulomas after poly-L-lactic acid (Sculptra) injections



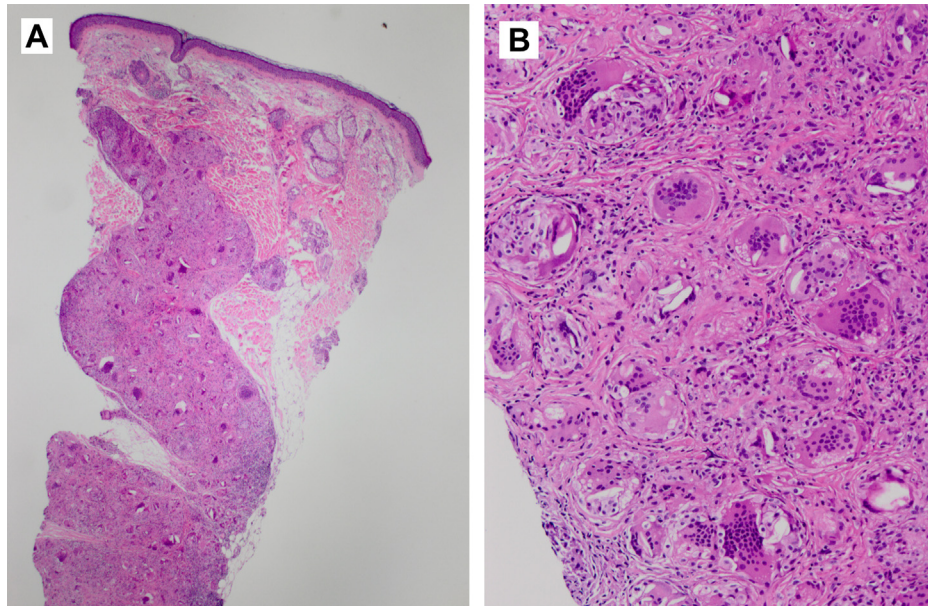
Dear Editor,

Poly-L-lactic acid (PLA; Sculptra; Dermik Laboratories, Berwyn, PA, USA) was introduced in 2004 for the treatment of facial lipoatrophy associated with human immunodeficiency virus. Later, it gained popularity as a cosmetic volumizer for soft-tissue enhancement in the general population.<sup>1</sup> Overall, PLA injections are associated with low complication rates. Self-limited, short-term complications include bruising and edema. Long-term complications such as clinically visible papules and subcutaneous nodules at the injection site have also been reported.<sup>1–7</sup> Herein, we present a case of multiple subcutaneous granulomas formation, which was confirmed by histopathological analysis, in an immunocompetent patient who received PLA injections for soft-tissue cosmetic enhancement.

A 62-year-old healthy woman presented to our clinic with a complaint of multiple firm skin-colored papules and subcutaneous nodules on the bilateral cheeks, chin, and temporal areas for 3–4 months (Figure 1). She mentioned a history of PLA (Sculptra) injection (three doses of unknown volume and dilution) during the past year. Results of a skin biopsy revealed granulomatous dermatitis consisting of epithelioid histiocytes, numerous multinucleated and osteoclast-like giant cells. Many of these giant cells also had fusiform clefts in the cytoplasm or stellate-shaped inclusion bodies (Figure 2). The intracytoplasmic fusiform clefts were filled with whitish birefringence crystalloid structures. The patient was treated with intralesional triamcinolone acetonide (3 mg/mL; 0.06–0.08 mL for each lesion, three treatment sessions; treatment duration: 2 weeks apart). After treatment, the subcutaneous nodules softened and gradually shrank.



**Figure 1** (A) Multiple firm, skin-colored papules and subcutaneous nodules on the bilateral cheeks and chin. (B) The subcutaneous nodules are highlighted.



**Figure 2** (A) The lower-power view (2×) reveals well-circumscribed oval- and S-shaped nodules. (B) The high-power view (10×) reveals numerous multinucleated and osteoclast-like giant cells, with many of them having fusiform clefts in the cytoplasm.

Delayed granulomatous reactions have been related to collagen, silicon, and hyaluronic acid. However, the rates of PLA-induced granulomas in the literature vary from 0.1% (reported by Vleggaar)<sup>6</sup> to 44% (reported in the VEGA study).<sup>7</sup> The discrepancy in the quoted rates of foreign-body granuloma formation after PLA injection may be attributed to differences in the injection techniques and the PLA concentrations used. Higher dilution volumes (5:1–7:1) are associated with lower rates.<sup>1</sup>

Although the precise mechanism of PLA-induced granulomas is uncertain, there are some proposed theories including excess PLA deposition, an unequal distribution of PLA particles, formed local clustering due to the lack of a massage at the injection site, clustering of the large PLA particles, and different responses of various injection sites. A previous report suggests that the incidence of granuloma formation is greater at the periorbital skin.<sup>4</sup> Preparation of PLA 24 hours prior to the injection to allow even distribution of the particles and adequate dilution volumes are recommended to decrease this side effect.

Treatment options for subcutaneous nodules are intralesional steroids, systemic steroids, systemic antibiotics, intense pulsed light, 5-fluorouracil, hydroxychloroquine, allopurinol, and surgical removal.<sup>1–5</sup> High doses of intralesional steroids (40–80 mg/mL) may be necessary for clinical resolution in some cases.<sup>4</sup>

In summary, we report a case of nodule formation after injection of PLA. Doctors should be aware of the risks, and caution is necessary when using them. Adequate preparation, dilution, and massage at the injection site are essential to minimize the risk of side effects. In addition, proficient injection skills and sufficient understanding of the properties of PLA are crucial.

Wei-Li Yang, Julia Yu-Yun Lee, Sheau-Chiou Chao\*

Department of Dermatology, National Chung Kung University Medical College and Hospital, Tainan, Taiwan

\* Corresponding author. 138 Sheng-Li Road, Tainan, Taiwan. Tel.: +886 6 235 3535; fax: +886 6 200 4326. E-mail address: joly@mail.ncku.edu.tw (S.-C. Chao)

Conflicts of interest: The authors declare that they have no financial or nonfinancial conflicts of interest related to the subject matter or materials discussed in this article.

## References

- Hamilton DG, Gauthier N, Robertson BF. Late-onset, recurrent facial nodules associated with injection of poly-L-lactic acid. *Dermatol Surg* 2008;**34**:123–6.
- Beer K. Clinicopathologic correlation of delayed-onset periorbital poly-L-lactic acid nodules. *Dermatol Surg* 2009;**35**:399–402.
- Aljotas-Reig J, Garcia-Gimenez V, Vilardell-Tarres M. Late-onset immune-mediated adverse effects after poly-L-lactic acid injection in non-HIV patients: clinical findings and long-term follow-up. *Dermatology* 2009;**219**:303–8.
- Reszko AE, Sadick NS, Magro CM, Farber J. Late-onset subcutaneous nodules after poly-L-lactic acid injection. *Dermatol Surg* 2009;**35**(Suppl. 1):380–4.
- Stewart DB, Morganroth GS, Mooney MA, Cohen J, Levin PS, Gladstone HB. Management of visible granulomas following periorbital injection of poly-L-lactic acid. *Ophthal Plast Reconstr Surg* 2007;**23**:298–301.
- Vleggaar D. Soft-tissue augmentation and the role of poly-L-lactic acid. *Plast Reconstr Surg* 2006;**118**(Suppl. 3):46S–54S.
- Valantin MA, Aubron-Olivier C, Ghosn J, et al. Poly lactic acid implants (New-Fill) to correct facial lipoatrophy in HIV-infected patients: results of the open-label study VEGA. *AIDS* 2003;**17**:2471–7.

Received: Dec 24, 2012

Revised: May 17, 2013

Accepted: May 17, 2013