

Accepted: 24 January 2022

Toxic local reaction after phosphatidylcholine mesotherapy

To the Editor,

Mesotherapy is a minimally invasive procedure that consists of multiple intradermal injections of small quantities of lipolytic agents, mainly phosphatidylcholine (PC) and deoxycholate (DC), either alone or in combination. Subcutaneous (s.c.) injections of lipolytic agents are used to treat localized fat accumulation and lipomas in order to induce adipocytes cell necrosis and reduce fat volume.¹ Associated adverse events are skin loss, blisters, cluster formation, infections, panniculitis, and fat necrosis.² Examinations of post-injection tissue revealed marked changes within the subcutaneous adipocytes; histological changes after treatment include marked inflammatory infiltration, fibrosis, panniculitis, fat necrosis with microcalcification, and cyst formation.³ We present three cases of toxic local reaction following s.c. injections with PC. All patients underwent one session of PC mesotherapy with the aim of reducing the adipocyte tissue; they were females, and the average age was 47 years (range: 42–52 years). They referred to our clinic for the onset of painful and itchy erythematous plaques always located in the same areas where mesotherapy was performed two weeks earlier (Figure 1). They were in good general health, not in therapy with systemic drugs, and in all cases, the mesotherapy technique was carried out by physicians. Although mesotherapy is considered a safe technique, it involves some detergent agents that can provoke a specific damage to the cell membrane (cell lysis) and cause numerous local and systemic side effects.⁴ We have observed three cases of toxic dermatitis at the sites of PC injection, and despite it is a rare but known reaction associated with mesotherapy, there are only two previous reports that describe the appearance of a reaction like those observed in our patients.^{4,5} In all these cases, the patients were young women with well demarcate,

painful, and pruritic edematous, erythematous plaques that involve the same areas where a mesotherapy had already been performed 1–2 weeks earlier. It is necessary to underline that this kind of delayed reaction is different from those appearing at the early stages at the site of injection and that tend to resolve within a few days without therapy (such as itchiness, hematomas, and erythema); the reaction we noticed is rather likely due to a direct toxic effect of the substances employed (PC) that does not resolve spontaneously but needs local and systemic treatments (Figure 2). The take-home message is the importance of patients' selection criteria, of the use of low-dose formulations of PC/DC, and of limiting treatment to small areas (such as the neck and jawline, lipomas, and bra rolls). Selecting well-vascularized areas that have no previous scarring and that have not been treated with liposuction is recommended to reduce the probability of potential side effects. Only subcutaneous injections, not adjacent to skin or muscle, are safely tolerated.⁶ PC tolerance should also be tested in a small area of the skin before mesotherapy sessions. In order to identify as early as possible any delayed toxic skin reaction and to treat it more effectively (since the side effects occurred after two weeks), the first patients' checkup should happen no later than two weeks after the mesotherapy session. Our therapeutic suggestion is in line with Córdoba et al. (2017) because we reached complete response with oral prednisone (minimum dose of 25 mg/die), oral cephalosporin (such as cefalexin), antihistamine medications, and topical steroid cream. A complete healing, in most cases, occurs within a few weeks from the treatment.

KEYWORDS

lipolytic, mesotherapy, phosphatidylcholine, toxic reaction

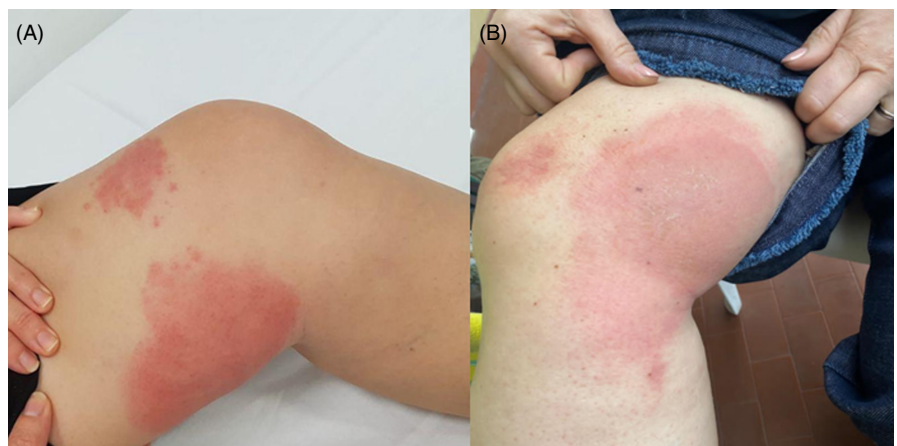


FIGURE 1 Erythematous plaques on knees of two different patients, 2 weeks after mesotherapy

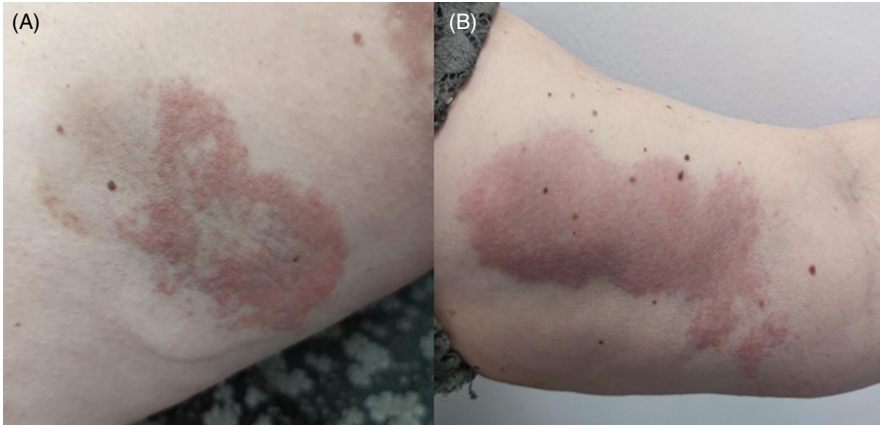


FIGURE 2 Erythematous plaques on arms and thighs one week after their appearance, without any treatment

CONFLICT OF INTEREST

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

AUTHOR CONTRIBUTIONS

All authors have significantly contributed to this work and approved the final version of the submitted paper. Nicola Di Meo and Iris Zalaudek defined the design and intellectual content of the paper. Giulia Bazzacco searched for literature, wrote the draft, edited the manuscript, and prepared them for submission. Claudio Conforti reviewed the article with consistent integrations.

REFERENCES

1. Bechara FG, Mannherz HG, Jacob M, et al. Induction of fat cell necrosis in human fat tissue after treatment with phosphatidylcholine and deoxycholate. *J Eur Acad Dermatol Venereol*. 2012;26:180-185.
2. Duncan DI, Palmer M. Fat reduction using phosphatidylcholine/sodium deoxycholate injections: standard of practice. *Aesthetic Plast Surg*. 2008;32:858-872.
3. Park EJ, Kim HS, Kim M, Oh HJ. Histological changes after treatment for localized fat deposits with phosphatidylcholine and sodium deoxycholate. *J Cosmet Dermatol*. 2013;12(3):240-243.
4. Córdoba S, Rojas E, Garrido-Ríos A, Borbujo J. Intense local reaction at the sites of injection of lipolytic mesotherapy. *Actas Dermosifiliogr*. 2017;108(10):958959. English, Spanish. [10.1016/j.ad.2017.02.027](https://doi.org/10.1016/j.ad.2017.02.027). Epub 2017 Jul 11. PMID: 28709616.
5. Mocosch A, Mota R, Gerber PA, Homey B. Schwere toxische dermatitis nach Injektionslipolyse [Severe toxic dermatitis after injection lipolysis]. *Hautarzt*. 2012;63(4):282-285. [10.1007/s00105-012-2359-2](https://doi.org/10.1007/s00105-012-2359-2). PMID: 22418769.
6. Duncan D, Rotunda AM. Injectable therapies for localized fat loss: state of the art. *Clin Plast Surg*. 2011;38(3):489-501. [10.1016/j.cps.2011.02.005](https://doi.org/10.1016/j.cps.2011.02.005). PMID: 21824545.