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Platelet-Rich Plasma Injection and Cutaneous Sarcoidal Granulomas

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Dear Editor:

Sarcoidosis is a systemic granulomatous disease that affects multiple organs including the lung, eyes and skin[1]. Platelet-rich plasma (PRP) is an autologous concentration of human platelets and has been used for treatment of skin wrinkles[2]. Here, we report the first case of sarcoidosis diagnosed by lesions of the lung, eyes and skin which was manifested as multiple sarcoid granulomas on the face where PRP had been injected for the treatment of skin wrinkles.

A 68-year-old Japanese woman who was suspected of ocular sarcoidosis was referred to us in January 2014 for evaluation of her skin lesions that had developed 5 months earlier. Physical examination showed multiple slightly reddish nodules up to 1 cm in diameter on the cheeks and forehead, around the eyes and mouth (Fig. 1). Her skin

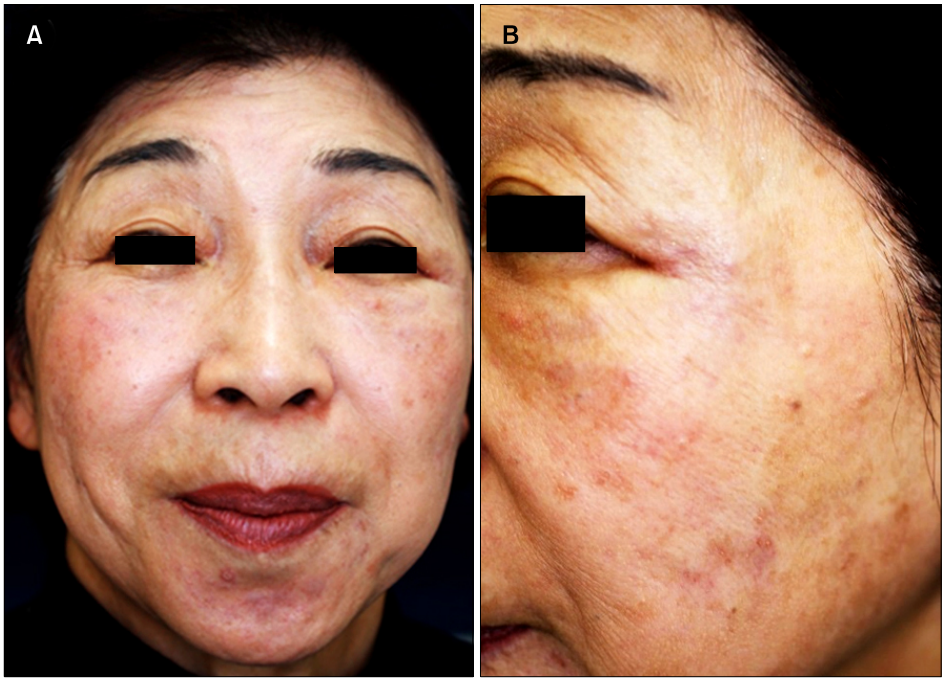

Fig. 1. (A) Multiple slightly reddish nodules up to 1 cm in diameter on the cheeks and forehead, around the eyes and mouth. (B) Close view of the left cheek.

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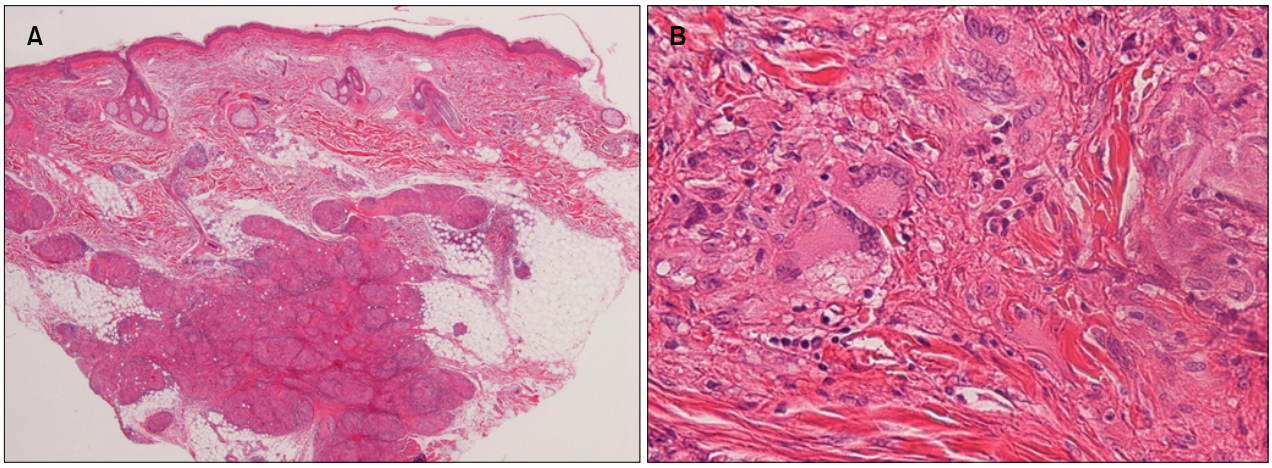

Fig. 2. (A) Skin biopsy specimen disclosed non-caseating granulomas in the mid to deep dermis and subcutis (H&E, ×20). (B) Granulomas contained numerous epithelioid cells and giant cells including Langhans' type (H&E, ×400).

wrinkles on the nasolabial folds and outside the eyes had been treated by the injection of hyaluronic acid (12 times) and botulinum toxin (7 times) during 4 years from 2006. Thereafter skin wrinkles on her face had been treated by PRP injection (12 times) during 2 years beginning in 2010. In August 2013, multiple skin nodules had appeared on her face where PRP had been injected. Two months later, she had seen an ophthalmologist complaining of dim eyesight. She had been suspected of ocular sarcoidosis because of her uveitis with granulomatous keratic precipitates and vitreous opacity. She had no other symptoms such as cough. Laboratory finding disclosed an elevated level of angiotensin converting enzyme (37.1 U/ml, normal 7.0～25.0 U/ml) and chest computed tomography showed bilateral hilar adenopathy. Skin biopsy specimen revealed non-caseating granulomas in the mid to deep dermis and subcutis (Fig. 2A). Granulomas contained numerous epithelioid cells and giant cells including Langhans' type with a small number of lymphocytes, indicating the naked granuloma (Fig. 2B). From these findings, the diagnosis of sarcoidosis was made and her skin lesions were effectively treated by topical corticosteroid injection without other systemic treatments.

PRP has been used for the treatment of skin wrinkles as it contains various growth factors such as platelet-derived growth factor and vascular endothelial growth factor (VEGF)[3]. The appearance of cutaneous sarcoid granulomas is well known to be related to the presence of foreign bodies such as silica, silicone and hyaluronic acid[4]. However, there has been no report of sarcoid granuloma appearing in the skin where PRP has been injected. We could not rule out completely the possibility that hyaluronic acid and botulinum toxin induced the formation of sarcoid granulomas. We speculate that PRP might be a trigger of cutaneous sarcoidal granulomas in an active sarcoidosis patient rather than that systemic sarcoidosis developed related with PRP injection. Although PRP does not contain foreign bodies, it contains various growth factors including VEGF, which is known to be an activating and chemotactic factor for monocytes and might be a triggering factor for cutaneous granuloma formation[5]. In addition, the possibility remains that cutaneous sarcoidosis developed incidentally at the PRP injection sites by the unknown factors other than PRP itself under the active sarcoidosis patient.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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Primary Cutaneous Aspergillosis after Tattoo Removal Using a 1,064-nm Q-Switched Nd:YAG Laser in an Immunocompetent Patient

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Dear Editor:

Cutaneous aspergillosis is an opportunistic fungal infection caused by *Aspergillus* species, which is usually caused by its direct inoculation at a site of skin injury, such as that induced by surgery, burn, or trauma[1]. Laser tattoo treatment using Q-switched lasers is the gold standard for tattoo removal[2]. Although tattooing has various complications, including infection, allergic reaction, and localized skin diseases, no infectious complications of laser tattoo removal have been reported. We present a rare complication of laser tattoo removal, primary cutaneous aspergillosis.

A 77-year-old previously healthy Korean man presented with multiple ulcers on both forearms (Fig. 1A). He had tattoos on his both arms for 50 years. One month previously, he had the tattoos removed by three sessions at 6-week interval of Q-switched 1,064-nm Nd:YAG laser treatment at local dermatologic clinic. On the treated sites, he was recommended to apply mupirocin ointment. After the third session, multiple ulcers with purulent discharge developed at the laser-treated sites. The lesions were painful and itchy. An excisional biopsy of the largest ulcer was performed. Considering an infectious condition, cefadroxil (500 mg twice daily) was prescribed for 2 weeks. However, the lesions had not improved markedly at the follow-up visit. No organisms grew in bacterial, acid-fast bacillus (AFB) and fungal cultures of the tissue. A cutaneous biopsy showed ulceration and partial necrosis of dermal collagen accompanied by diffuse lymphohistiocytic infiltration (Fig. 1C). Periodic acid-Schiff (PAS) staining showed many septate fungal hyphae with dichotomous branching, which is compatible with cutaneous aspergillosis (Fig. 1D). After 4 weeks of itraconazole (100 mg twice daily), and the lesions improved dramatically (Fig. 1B). To determine the causative organism, histological samples were investigated using polymerase chain reaction (PCR). DNA was extracted from the samples using a DNA prep kit (BIOFACT, Daejeon, Korea). Oligonucleotide primers used to detect all fungi generically and *Aspergillus* specifically were designed from known sequences[3]. PCR was performed to identify fungal *Aspergillus*-specific and *A. fumigatus*-specific DNA (Fig. 2).

Laser tattoo removal using Q-switched lasers is generally

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