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Mysterious Filler Granuloma - Case Report

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Chief complaint: Erythematous nodule on right cheek for 14 days

Present illness:

A 54-year-old man presented with solitary ill-defined erythematous indurated nodule on medial side of right cheek for 14 days. He had history of filler injection at both cheeks from private clinic since 10-year ago. He had comedone-liked brownish papule on medial side of right cheek and he scratched for 4 days, then increased in size and in amount with purulent discharge. He took oral amoxycillin by himself without clinical improvement; then he was treated with oral amoxycillin 875 mg/clavulanate 125 mg twice daily, oral prednisolone, and chlorpheniramine for 5 days from second private clinic. After that, He came to the authors' institute and was investigated with incisional biopsy from nodule of right cheek. Intraoperative findings were friable tissue with purulent viscous yellowish discharge.

Past history: He had no known underlying disease, no food or drug allergy.
Family history: No family member experienced the same condition with the patient.

Physical examination:

General appearance: Thai man, afebrile, alert and good consciousness.
HEENT: no pallor, no jaundice, no lymphadenopathy.
Heart & lungs: normal.
Abdomen: soft, not tender, no palpable mass, no hepatosplenomegaly.
Neuro exam: motor power grade V all, no paresthesia.

Dermatological examination:

Skin: solitary ill-defined non-scaly erythematous indurated nodule on medial side of right cheek.
Oral cavity: no oral thrush, no oral hairy leukoplakia.
Nail: normal.

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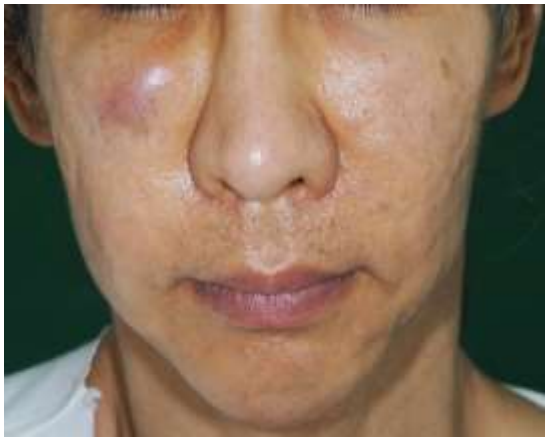
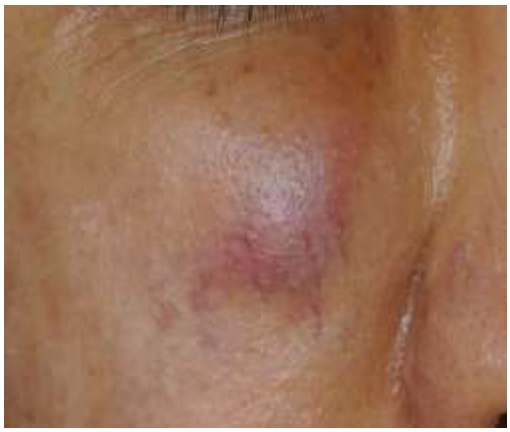




Histopathology: skin biopsy from right cheek

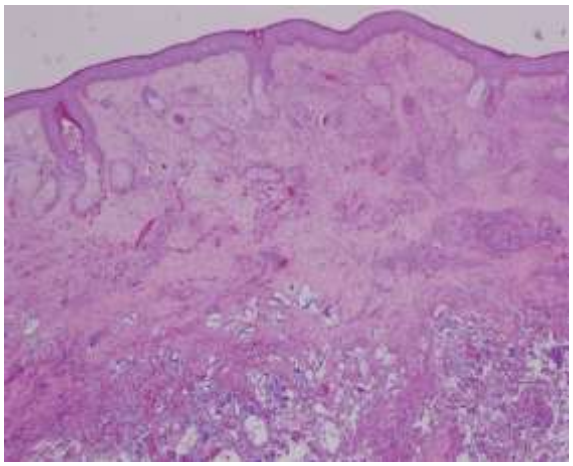
Incisional biopsy sections display focal aggregates of histiocytes and foreign body giant cells in the deep dermis. Amorphous bluish material is noted within the giant cells. No cystic/follicular lesion is seen. In addition, focal aggregates of neutrophils forming abscesses are identified. The overlying epidermis and surrounding dermis are unremarkable. No malignant component is observed. The findings are those of filler granuloma with inflammation.

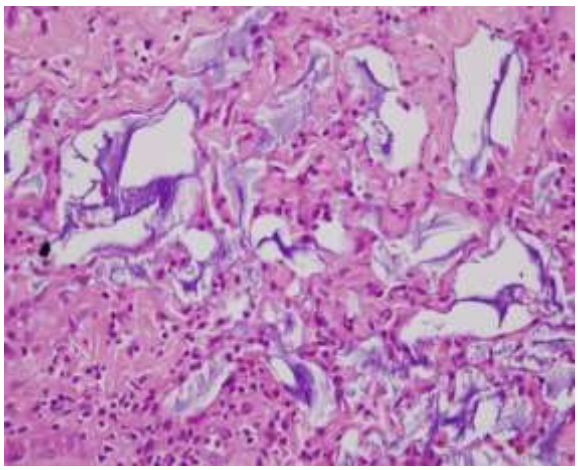
Tissue culture for aerobic bacteria: *Staphylococcus aureus*

Pus culture for aerobic bacteria: no growth

Tissue culture for mycobacteria: no growth

PCR for mycobacteria: negative





H&E x4 **H&E x100**

Diagnosis: ***Filler granuloma with Staphylococcus aureus infection.***

Treatment: He was treated with amoxycillin 875 mg and clavulanate 125 mg twice daily and clindamycin 900 mg/day for two weeks then the nodule at right cheek slightly improved. The nodule gradually healed without scar.

Discussion:

Injectable soft-tissue fillers are classified into biodegradable products such as hyaluronic acid, collagen, calcium hydroxyapatite, and poly-l-lactic acid; products that remain indefinitely in tissue, such as polymethylmethacrylate microspheres, hydrogel polymers, and silicone; and viable autologous fat.[1] This patient claimed that he was injected with Aqualift (National Medical Technologies Center Co., Ltd., Ukraine).

This product is a hydrophilic gel of polyamide in saline. It is not licensed by the U.S. food and drug administration (U.S.FDA). Polyamide is more commonly known as nylon, which is the same substance used, since a long time, to fabricate unabsorbable sutures. It is reasonable to consider this product as a permanent filler.[2]

Postprocedural complications vary and can be categorized based on their timing in relation to the filler injection as early (less than 14 days), late (more than 14 days up to 1 year), and delayed (more than 1 year).[3] Delayed reactions may present with nodules, abscesses, solid edema, and discoloration.[4] In this patient, the lesions were developed with nodules on right cheek after dermal filler injection since ten years ago, it turned to inflammatory nodule within 4 days after he pricked on right cheek, it can be compatible with acute onset superimposed delayed lesion.

The hallmark histologic appearance of late and delayed complication, included polyamide is a foreign body granuloma, which is a focus of chronic inflammation in response to either a foreign body or a collection of chronic bacteria too large to be engulfed by a single cell.[5] Other histologic reactions included infectious granuloma, dermal pseudocysts with chronic inflammation, dermal fibrosis, and eosinophilic panniculitis.[6] If there is no evidence from the patient's history, some outstanding histopathological findings in filler granulomas such as poly-L-lactic acid presented with multinucleated giant cells and needle-like birefringent structures.[7,8] In addition, polyacrylamide hydrogel has some molecular shows some histopathologic similarity to hyaluronic acid, although granulomas secondary to hyaluronic acid usually consist of a less dense inflammatory infiltrate than those secondary to polyacrylamide hydrogel. Polyacrylamide hydrogel is positive with alcian blue stain and it is not birefringent under polarizing microscopy.[8,9] Copolyamide has the same pathologic manifestation as polyacrylamide gel.[10]

In this case, histological findings are amorphous bluish material within the foreign body giant cells with focal aggregates of neutrophils forming abscesses. Furthermore, tissue culture for aerobic bacteria was found *Staphylococcus aureus.* These findings are compatible with bacterial superimposed filler granuloma. Approximately 50% to 60% of individuals are intermittently or permanently colonized with *S. aureus* and, thus, there is relatively high potential for infections.[11] Filler implants can be infected by injection of skin flora directly into the material during the procedure, or they can be seeded with bacteria through contiguous direct extension or hematological spreading.[12]

The first step in managing delayed filler reactions is to make every effort to determine the type of filler causing the reaction. Permanent fillers unfortunately lack dissolving antidote. Nodules from this filler tend to be persistent. If the nodule or mass is fluctuant, incision and drainage should be performed. Antibiotic therapy should be immediately initiated. In presented case, patient was improved after oral antibiotics and incision at the nodule.

In summary, we presented cutaneous manifestation of bacterial superimposed filler granuloma. The patient presented with solitary ill-defined non-scaly erythematous indurated nodule on medial side of right cheek. A biopsy specimen from nodule at medial side of right cheek revealed amorphous bluish material focal aggregate of histiocytes and foreign body giant cells in the deep dermis. Tissue aerobic culture revealed *Staphylococcus aureus*. Proper treatments were combination of oral antibiotics and incision were given, then the lesion healed gradually.

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