CASE REPORT

A case of pyogenic granuloma recurrent with satellite lesions

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Abstract : A 10-year-old Japanese female was referred to our hospital for a rapidly growing and easily bleeding nodule on her right temple. A physical examination revealed a red ulcerated nodule on her right temple. Our clinical diagnosis was pyogenic granuloma (PG), and cryotherapy was performed several times. However, this did not remove the tumor ; therefore, we excised it under local anesthesia. A histopathological examination of the removed tumor showed vascular proliferations arranged in discrete lobules in the dermis. Based on these findings, we confirmed the diagnosis of PG. About 4 months after the surgery, small nodules gradually developed around the surgical scar. The patient returned to our hospital 1 year after the surgery. A physical examination showed multiple, small, red papules scattered around the surgical scar. Based on the clinical findings of this case, we made a diagnosis of the recurrence of PG with satellitosis (RPGS). The lesions disappeared after 6 months of topical steroid and liquid nitrogen therapy. RPGS is a rare phenomenon, but its diagnosis and management can be problematic. It is important for physicians to recognize this phenomenon and inform patients of the possibility of recurrence and the development of satellite lesions after PG is resected. J. Med. Invest. 72 : 440-442, August, 2025

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INTRODUCTION

Pyogenic granuloma (PG) is a common reactive vascular lesion of the skin and mucous membranes that arises in response to various stimuli, including minor trauma, chronic low-grade irritation, hormonal factors, certain kinds of drugs, and iatrogenic stimulation in dental practice (1). PG usually presents as a solitary, sessile or pedunculated red nodule and shows rapid exophytic growth. The surfaces of PG lesions often exhibit ulceration, and PG lesions are prone to hemorrhaging. PG most often affects children or young adults of either sex, but the age range of affected patients is wide. The hands, fingers, and face are the most commonly affected sites. Histologically, PG is a lobular capillary hemangioma and shows lobular arrangements of capillary vessels and proliferating endothelial cells delineated by fibrous septa (2). As PG lesions bleed easily, they are usually excised, but other common treatment modalities, including cryotherapy, laser therapy, shave excision, sclerotherapy, electrodesiccation, curettage, ligation, and topical corticosteroids, are also used (3, 4). The local recurrence of PG after treatment is very common. However, the appearance of multiple satellite lesions after the excision of the initial PG lesion has been rarely reported.

We present the case of a 10-year-old female, who presented with PG of the head, which recurred together with satellite lesions after surgical excision.

CASE REPORT

A 10-year-old Japanese female with no remarkable medical history was referred to our hospital for a rapidly growing and easily bleeding nodule on her right temple. A physical examination revealed a red ulcerated nodule on the right temple (Figures 1A and B). From these clinical findings, we considered the tumor to be a PG and performed cryotherapy several times, but the nodule was not removed. Therefore, we excised the nodule under local anesthesia. A histopathological examination of the removed nodule revealed vascular proliferations, arranged in discrete lobules of varying sizes, throughout the papillary and reticular dermis (Figure 2A). Individual lobules were composed of small, uniform, well-formed capillary channels clustered around central vascular spaces, which were slightly angulated and dilated. The surrounding stroma was fibrotic. Inflammatory cells were sparse (Figure 2B). A diagnosis of PG was finally confirmed. About 4 months later, several small red papules began to appear around the surgical wound site, and they gradually increased in number. Therefore, the patient returned to our hospital 1 year after the surgery. A physical examination showed multiple, small, red papules with smooth surfaces scattered around the previous surgical wound (Figure 3). We were unable to obtain the patient's (or her parents') consent to perform a skin biopsy. However, based on the clinical features of this case we made a diagnosis of the recurrence of PG with satellitosis (RPGS). The lesions were treated with topical betamethasone butyrate propionate and liquid nitrogen therapy once a month, and they had disappeared after 6 months of treatment (Figure 4).

DISCUSSION

RPGS, which is also known as Warner-Jones syndrome (after the authors who initially described this condition) (5), is a well-recognized, but rare phenomenon. About 50 cases have been reported in the English literature to date (6-8). Most recurrent lesions appear between 4 to 20 weeks after the excision of a solitary PG lesion, but they can occur up to 2 years after treatment. The lesions tend to be asymptomatic, smooth, bright red, sessile papulonodules, measuring 1 mm to 1 cm in diameter, and to cluster in satellite-fashion around the surgical scar. The

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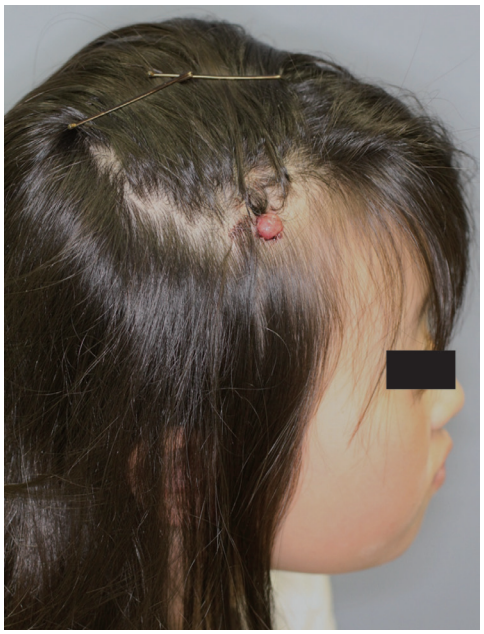


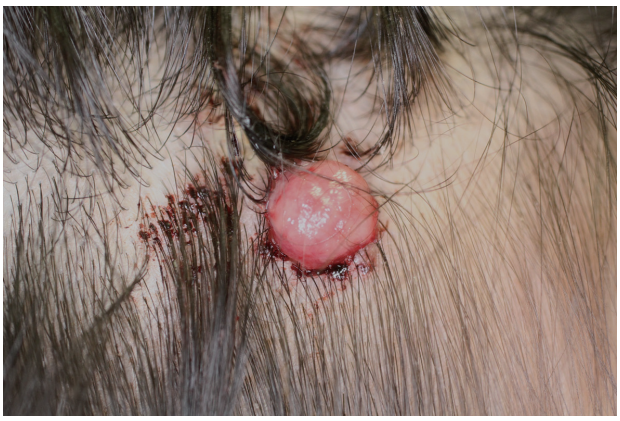
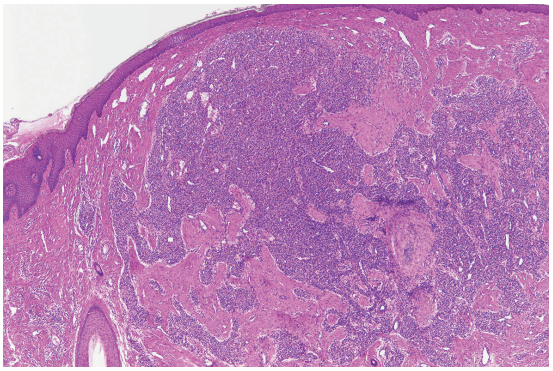


Figure 1.
(A) A red nodule was seen on the right temple.
(B) Its surface was ulcerated.



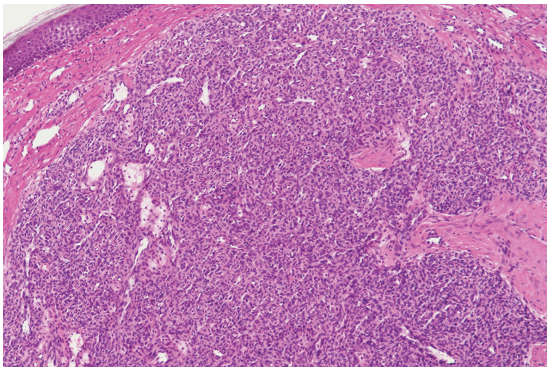


Figure 2.
(A) The lesion was composed of vascular spaces arranged in lobules in the dermis (hematoxylin-eosin stain; X40)
(B) The lobules were composed of a variably dilated network of capillary vessels and groups of poorly canalized vascular tufts (hematoxylin-eosin stain; X100).

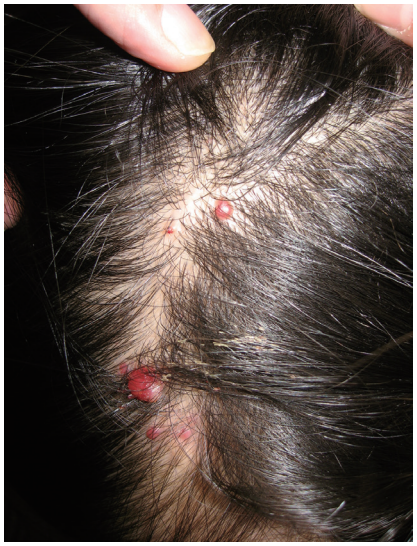


Figure 3. Multiple small, red nodules were seen around the surgical scar 1 year after the surgery.

Figure 4. The lesions disappeared after 6 months of treatment.

histological findings of the satellite lesions are identical to those of PG. With few exceptions, patients with RPGS are adolescents or young adults. Although the hands and face are the sites most commonly affected by PG, RPGS lesions usually do not arise in these locations. The most common site of RPGS is the trunk, especially the interscapular region.

Although most reported cases of RPGS developed after surgical excision of the original lesion, RPGS has also been provoked by cautery, carbon dioxide laser excision, ligation, and curettage (9). The precise pathogenesis of satellitosis remains unknown. The predilection of RPGS to occur in the scapular region suggests that recurrent trauma due to pressure during sleep may cause this phenomenon. It has also been suggested that the release of angiogenic factors, such as vascular endothelial growth factor, after trauma to the initial lesion could play a role in the development of RPGS (10). However, cases of PG with satellitosis without any preceding surgery have also been reported (11).

In our case, the patient was 10 years old, and the satellite lesions began to develop about 3 months after surgery for a PG lesion located on the right temple. The patient's age and the time of onset of the satellite lesions are almost identical to those of typical RPGS cases. However, the temple is a rare location for RPGS, and only one other case of RPGS located on the scalp has been reported (12). It is unclear what kind of stimuli induced the lesion, but persistent rubbing against bedclothing while sleeping may be a factor.

Similar therapeutic modalities to those used to treat PG have been employed as treatments for RPGS. Since spontaneous involution has been reported to occur within 6 to 12 months in some cases (9, 13), clinical observation is one possible treatment. In our case, combination therapy involving topical steroid treatment and cryotherapy was effective.

Recently, several studies have shown that alteration of the oncogenic genes such as *HRAS*, *KRAS*, *BRAF*, and *MAP2K1*, which leads to overactive mitogen-activated protein kinase (MAPK) signaling, in some cases of PG (14, 15). Although PG has been considered to be an inflammatory reaction to exogenous stimuli, these findings indicate that PG is a true neoplastic condition.

These oncogenic alterations might also contribute the development of RPGS, but mutational analysis has not been conducted in cases of RPGS yet.

RPGS is a rare complication of PG, but its diagnosis and management can be problematic. It is important for physicians to recognize this phenomenon and inform patients that PG may have oncogenic abnormalities and that there is the possibility of recurrence and the development of satellite lesions after PG is resected.

CONFLICTS OF INTEREST

None declared

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