

Spontaneous pyogenic granuloma on port wine stain: case report

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Abstract

Introduction: Pyogenic granuloma (PG) is a benign vascular tumor of skin and mucous membranes which more commonly develops following trauma, laser treatment, or pregnancy. Although infrequently, PG may arise spontaneously in richly vascularized area due to arteriovenous anastomoses found in Port Wine Stain (PWS).

Case Presentation: A 44-year old woman presented with a solitary, dome-shaped, 7x7 mm nodule covered with crusts and scales emerging on sharply demarcated erythematous macule extending from temporal to maxillary part of the left side of her face. The distribution was aligned with the innervation of the second branch of trigeminal nerve. We performed shave biopsy for treatment and followed with 30% TCA to treat the bleeding. The obtained specimen revealed acanthosis, rete ridges lengthening, and capillary proliferation under histopathology examination, confirming the diagnosis of PG. However, the specimen was not enough to confirm the diagnosis of PWS histologically.

Discussion: The congenital defect in PWS may have increased number arteriovenous anastomoses that lacks capillary bed to deliver blood to surrounding tissue. The decrease in oxygen delivery may induce angiogenesis that may contribute to the development of PG.

Keywords: Pyogenic granuloma; port wine stain; shave biopsy

1. Introduction

Pyogenic granuloma (PG), known as lobular capillary hemangioma, is a benign vascular tumor of skin and mucous membranes more commonly found in children.(Amerson, Burgin and Shinkai, 2019; MacArthur and Püttgen, 2019; Shruti *et al.*, 2019) PG more commonly develop following trauma, laser treatment, or pregnancy.(Chen *et al.*, 2011; Shruti *et al.*, 2019) Although infrequently, PG may arise spontaneously in richly vascularized area due to arteriovenous anastomoses.(Shruti *et al.*, 2019) PWS is a congenital vascular of neural malformation and consist of ectasia of venules in the upper dermis and, speculatively, arteriovenous anastomoses.(Chen *et al.*, 2011) Therefore, PWS may be underreported predilection factor of PG. Here we reported a case of spontaneous PG arising within PWS without prior history of trauma, laser treatment, nor pregnancy in adult woman.

2. Case Presentation

A 44-year old woman presented with a lesion on her forehead that rapidly grow within 2 months within a congenital, diffuse red patch extending from temple to cheek. The growth was non-pruritic with occasional episodic spontaneous bleeding. She reported frequent squeezing of the growth when it was smaller and the growth seemed to increase in size following the action. She denied history of manipulating the site of growth before the occurrence. Similar growths arose on her gum during her first and second pregnancy, approximately

15 and 21 years prior.

Upon physical examination, we found a solitary, dome-shaped, 7x7 mm nodule covered with crusts and scales emerging on sharply demarcated erythematous macule extending from temporal to maxillary part of the left side of her face. The distribution was aligned with the innervation of the second branch of trigeminal nerve. We performed shave biopsy for treatment and followed with 30% TCA to treat the bleeding. The obtained specimen revealed acanthosis, rete ridges lengthening, and capillary proliferation under histopathology examination, confirming the diagnosis of PG (Figure 2). However, the specimen was not enough to confirm the diagnosis of PWS histologically. Lesion completely healed within 7 days of treatment.

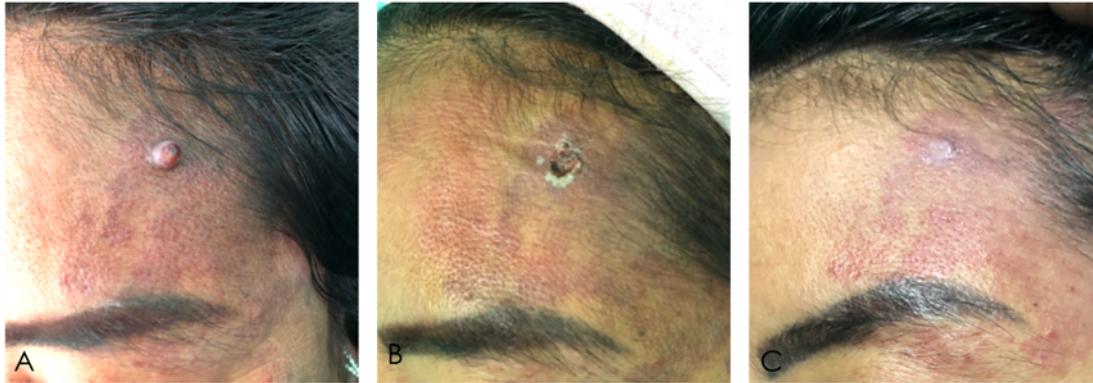


Figure 1 Clinical features of the patient at first presentation (A), after shaving biopsy (B), and 1 week after (C).

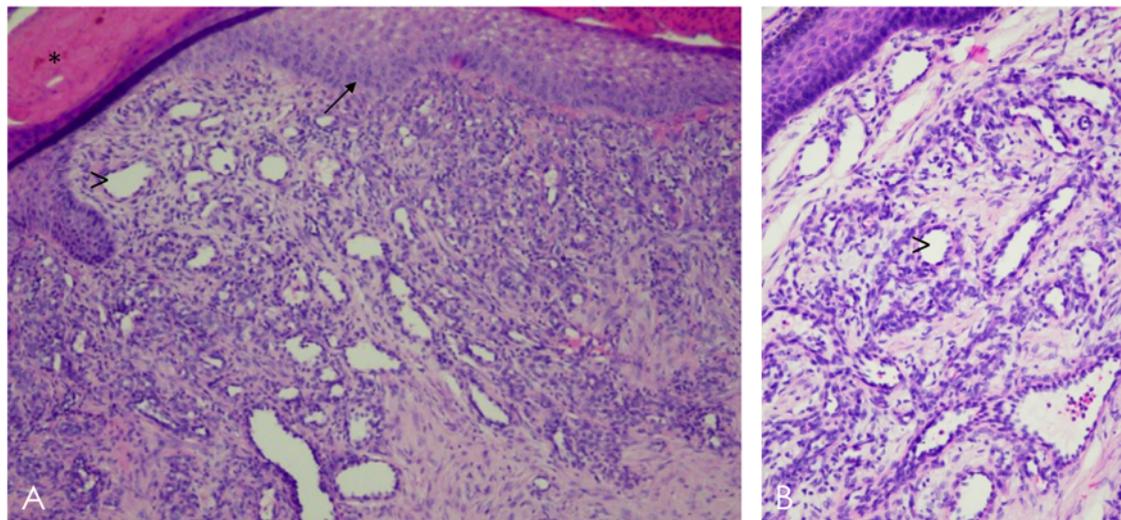


Figure 2 Histopathological picture at (A) 40x and (B) 100x magnification. There is acanthosis (*), capillaries (>), and rete ridges lengthening (arrow).

3. Discussion

PG is a mass of capillaries and venules with immature endothelial cells proliferation amidst an edematous stroma.(Chen *et al.*, 2011) Understanding the histology of PG explains why the lesion may spontaneously arise on arteriovenous anastomoses in vascular-rich areas like fingers, hands, lips, tongue, and face, although it is even more likely to occur following lesions manipulations, such as rubbing of a shirt collar, cryotherapy, or lasers.(Rodins *et al.*, 2011; Shruti *et al.*, 2019)

Cutaneous PG is more likely to develop in children, while oral PG in pregnant women.(Rodins *et al.*, 2011) Reports found that PG may also arise within pre-existing vascular abnormalities, such as PWS.(Chen *et al.*, 2011) The congenital defect in PWS may have increased number arteriovenous anastomoses that lacks capillary bed to deliver blood to surrounding tissue. The decrease in oxygen delivery may induce angiogenesis that may contribute to the development of PG.(Chen *et al.*, 2011) The hypothesis may explain the finding of cutaneous PG on an adult, non-pregnant woman. Statistically, nodules arising within PWS are more prone to occur in the area of the face innervated by the second branch trigeminal nerve, which confirmed the result found in this case.(Chen *et al.*, 2011)

Shave excision is one of the treatments that allow for histological confirmation and hence provide diagnosis certainty.(Rodins *et al.*, 2011) However, the lack of skin depth hindered us from confirming the diagnosis of PWS in our case. An excisional biopsy should be considered in future case for better histological confirmation.

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