Int J Burn Trauma 2022;12(3):127-130
www.IJBT.org /ISSN:2160-2026/IJBT0142472

Case Report

Pyogenic granuloma after burns: a case report and review of the literature

Ghita Belmaati Cherkaoui[1,2], Ayyoub Souarji[1,2], Ayat Allah Oufkir[1,2]

[1]Department of Plastic and Reconstructive Surgery, Mohamed IV Hospital University, Oujda, Morocco; [2]Research Laboratory in Medical Sciences, Faculty of Medicine and Pharmacy of Oujda, Mohammed I University, Oujda, Morocco

Received February 20, 2022; Accepted May 3, 2022; Epub June 15, 2022; Published June 30, 2022

Abstract: Pyogenic granuloma (PG) is a benign vascular proliferative tumor of the skin and mucous membranes, it can appear spontaneously or following triggering factors. Different clinical aspects are described, pyogenic granulomas following burns (GB) are rare. We report a case of post-burn pyogenic granuloma confirmed by histological study and treated surgically. This new observation will allow us to further clarify this condition.

Keywords: Pyogenic granuloma, burn

Introduction

Pyogenic granuloma (PG) is a benign vascular proliferative tumor of the skin and mucous membranes [1, 2], first described by Poncet and Dor in 1897 [3]. Several denominations are used to describe it (**Table 1**) [2]. Post-burn pyogenic granulomas (PBG) are quite rare: they often occur after a second-degree burn. Their diagnosis is essentially clinical in children. In adults, other tumors may mimic PGB, mainly Kaposi's sarcoma, angiosarcoma, squamous cell carcinoma [4]. We report a new case of multiple post-burn GP treated surgically.

Case report

A 9-month-old girl consulted for skin tumors of the abdomen that had evolved 10 days earlier, following superficial second-degree scalding burns. On clinical examination, the child presents with 2 limited exophytic sessile ulcerated lesions, bleeding at touch, located on a pink atrophic burn scar. The diagnosis of localized post-burn eruptive PG was made and confirmed histologically after full-thickness surgical excision (**Figure 1**) and primary closure (**Figure 2**). No microbiological study was done before surgery, there was no clinical infection.

Discussion

GP represents 0.5% of cutaneous nodules in children. It can be cutaneomucosal or visceral, single or multiple [4]. Various factors are incriminated in its occurrence: increased levels of female sex hormones; inflammatory diseases; infections and medications [1-3, 5].

Pyogenic granulomas following burns (PGB) are different from classic pyogenic granulomas [4-9]:

○ PGB patients have an initial burn.

○ Most PGBs develop an acute eruption between 1 and 4 weeks after the burn.

○ PGBs may be infected by bacteria, fungi and viruses.

○ PGBs have three main histological characteristics: hyperkeratosis, numerous newly formed proliferative vascularizations, and edematous stromata with inflammatory and plasma cells.

Infectious agents may also play the role of a secondary stimulus in the initiation of PGBs, several germs have been found in patients with PGBs [6, 10]. Burn patients are easily superinfected, however, the reasons why only few

Table 1. Nomenclature of pyogenic granuloma [2]

Name
Botryomycosis hominis
Granuloma telangietodes
Granuloma pediculatum benignum
Granuloma telangiectaticum pediculatum
Pseudobotryomycosis
Granuloma telangiectaticum
Granuloma pyogenicum
Fibroangioma
Hartzell disease
Bloody wart
Septic granuloma
Hemangiomatous granuloma
Lobular capillary hemangioma
Eruptive capillary hemamgioma

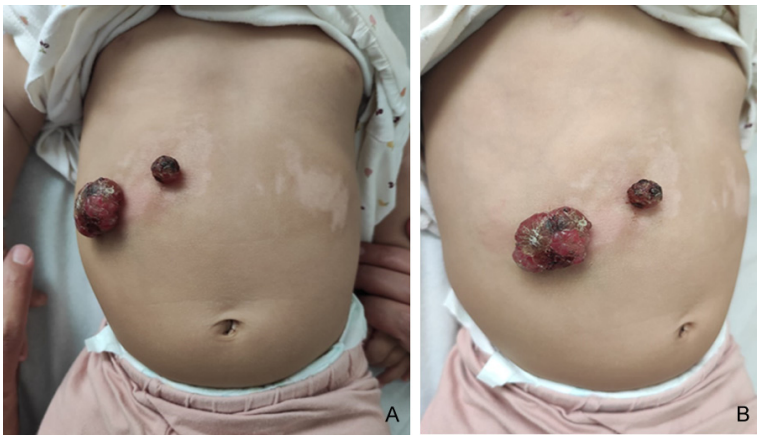

Figure 1. Postburn pyogenic granuloma of the abdomen before treatment. A: Front view, B: ¾ view.

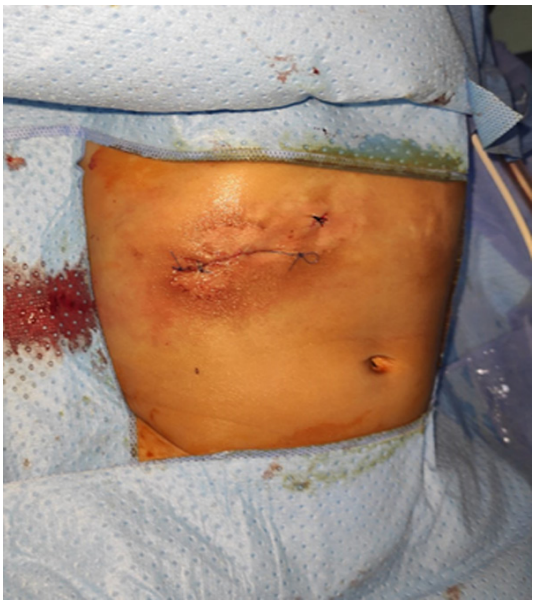

Figure 2. Surgical treatment by excision and suture in 2 planes.

patients develop PGB are unclear.

Different treatments are used including conservative treatment, which is usually different from that of classical pyogenic granuloma (therapeutic abstention with oral antibiotic therapy: erythromycin 40 mg/kg): electrocoagulation, cryotherapy, laser, shaving, surgery [2, 10].

Because PGBs can involve the reticular dermis, pulsed dye lasers, cauterization, and shaving may not be able to reach the total PG, and these modalities have a 43.5% recurrence rate [2]. Definitive treatment requires full-thickness skin excision [10].

Only 29 cases of PGB have beeń reported in the literature [6, 11, 12]. Most often, lesions appear 1 to 4 weeks after the occurrence of second-degree thermal burns by mostly hot liquids (**Table 2**).

Nineteen of the 29 cases were children under 9 years old, with a slight female predominance (sex ratio: 0.93).

The geographical origin of the reported cases may be of interest. No case has been described in Europe or North America. On the other hand, 8 cases out of 29 have been described in China, 7 in Iran, and 6 in Turkey.

The treatment choice depended on several factors, especially the location and the number of lesions. 27.5% of the patients reported (8/29) had surgical excision, 65.5% (19/29) had conservative treatment, and 10.3% (3/29) regressed spontaneously (**Table 3**).

In our patient, the epidemiologic and clinical features are similar to the cases reported in the literature. The choice of surgical treatment was made in view of the local skin laxity and the possibility of primary closure without major scarring. This one-time treatment was preferred to other modalities: laser, coagulation, antibiotic therapy, etc., for the rapidity of the

Table 2. General data on post-burn pyogenic granuloma

Authors	Origin country	cases	Age/sex	Burn agent	Depth of burns	Appear time after burns
De kaminsky et al. [6] (1978)	Argentiae	1	15 month/F	Boiling milk	2	1 week
Momeni et al. [7] (1995)	Iran	3	1, 5 year/M 5 years/F 35 years/F	Boiling milk Boiling milk Boiling milk	2 and 3 2 2	2 weeks 2 weeks 2 weeks
Ceyhan et al. [8] (1997)	Turkey	1	18 month/F	Boiling milk	2	1 week
Liao et al. [13] (2006)	China	2	41 years/M 19 years/M	Boiling water Boiling water	2 2	20 days 9 days
Aliağaoğlu et al. [14] (2006)	Turkey	1	5 years/F	Not mentioned	2	2 weeks
Bozkurt et al. [15] (2006)	Turkey	1	2 years/M	Boiling milk	2	8 weeks
Diallo et al. [16] (2006)	Senegal	3	8 month 13 month 13 years	Thermal burn	2 2 2	Not mentioned Not mentioned Not mentioned
Ceyhan et al. [17] (2007)	Turkey	1	17 month/M	Boiling water	2	2 weeks
Shirol et al. [18] (2012)	india	1	42 ans/F	Not mentioned	2	1 year
Durgun et al. [9] (2013)	Turkey	2	18 month/F 7 years/M	Boiling milk Boiling milk	2 2	29 days 2 weeks
Zhao et al. [11] (2015)	China	5	4 years/M 15 month/M 3 years/F 26 month/F 2 years/F	Thermal burn	2 2 2 2 2	Not mentioned
Dastgheib et al. [19] (2016)	Iran	1	12 years/M	Boiling milk	2	2 weeks
Xu et al. [20] (2016)	China	1	4 years/F	Boiling Soup	2	30 days
Ashk Torab et al. [21] (2018)	Iran	1	15 month/F	Boiling water	2	10 days
Mansoul et al. [4] (2018)	Algérie	1	3 years/M	Boiling water	2	10 days
Iraji et al. [22] (2021)	Iran	1	30 years/F	Boiling oil	3	4 weeks
Mezdour et al. [12] (2021)	Algeria	2	28 years/M 47 years/F	Petrol petrol	2 2	20 days 20 days
Keshavarzi et al. [23] (2021)	Iran	1	49 years/F	Boiling water	deep	2 weeks

Table 3. Treatment of pyogenic granulomas

Authors	Localisation of PGB	Number of lesions	Treatement
De kaminsky et al. [6] (1978)	Face, trunk, arms	Not mentioned	electrocoagulation
Momeni et al. [7] (1995)	Face, neck, back and thigh Abdomen and thigh Face	28 lesions 65 lesions 90 lesions	Therapeutic abstention Electrocoagulation of 2 lesions + abstention of the rest Therapeutic abstention
Ceyhan et al. [8] (1997)	Face, trunk, arms	Not mentioned	Excision + suture
Liao et al. [13] (2006)	Face, left forearm Front, back and upper limb	Non mentionnés More than 9 lesions	topical antibiotic topical and oral antibiotics
Aliağaoğlu et al. [14] (2006)	arm	2 lesions	Excision + suture
Bozkurt et al. [15] (2006)	Left upper limb	5 lesions	Excision + suture
Diallo et al. [16] (2006)	Not mentioned	Not mentioned	Therapeutic abstention
Ceyhan et al. [17] (2007)	arm	Multiple lesions	Oral antibiotic
Shirol et al. [18] (2012)	chin	1 lesion	Excision + graft
Durgun et al. [9] (2013)	Face and neck forearm	Multiple lesions 7 confluent lesions	Excision + suture Excision + total skin graft
Zhao et al. [11] (2015)	Face and neck Arm and handbras Back and buttocks hand	Multiple lesions	antibiotic
Dastgheib et al. [19] (2016)	Lower limbs	Multiple lesions	No follow up
Xu et al. [20] (2016)	Left arm and elbow	Multiple lesions	Chinese herbal medicine
Ashk Torab et al. [21] (2018)	Back	Multiple lesions	Plant application
Mansoul et al. [4] (2018)	Left buttock	6 lesions	Topical beta-blocker
Iraji et al. [22] (2021)	forearm	Multiple lesions	Antibiotic + excision + electrocoagulation
Mezdour et al. [12] (2021)	Left forearm	Multiple lesions Less extensive	Topical beta-blocker Topical beta-blocker
Keshavarzi et al. [23] (2021)	hand	Not mentioned	Excision + thin skin graft

result. No reccurence evolved at 6 months follow-up.

Conclusion

PGB lesions are benign based on clinical features and histological examinations. Several successful methods have been used to treat pyogenic granuloma but surgery when possible represents the most reliable way of local control.

Disclosure of conflict of interest

None.

Address correspondence to: Ghita Belmaati Cherkaoui, Department of Plastic and Reconstructive Surgery, Mohamed IV Hospital University, Oujda, Morocco; Research Laboratory in Medical Sciences, Faculty of Medicine and Pharmacy of Oujda, Mohammed I University, Oujda, Morocco. ORCID ID: https://orcid.org/0000-0003-2177-5828; E-mail: ghita.cherkaouibelmaati@gmail.com

References

[1] Kirschner RE and Low DW. Treatment of pyogenic granuloma by shave excision and laser photocoagulation. Plast Reconstr Surg 1999; 104: 1346-1349.
[2] Patrice SJ, Wiss K and Mulliken JB. Pyogenic granuloma (lobbular capillary hemangioma): a clinicopathogic study of 178 cases. Pediatr Dermatol 1991; 8: 267-276.
[3] Poncet A and Dor L. Botryomycose humane. Rev Chir 1897; 18: 996-997.
[4] Mansoul T, Aimene NEH, Bouarroudj K, Yassamine K, Bounadeur C and Chehad AS. Un cas de granulomes pyogéniques éruptifs post-brûlure avec revue de la littérature. Annales de Dermatologie et de Vénéréologie 2018; 145 Suppl: S178-S179.
[5] Tervahartiala B and Ainamo J. The development during pregnancy of pyogenic granulomas superimposed upon a congertital hemaneioma: a case report. J Periodontol 1989; 60: 358-361.
[6] De Kaminsky AR, Otero AC, Kaminsky CA, Shaw M, Formentini E and Abulafia. Multiple disseminated pyogenic granuloma. Br J Dermatol 1978; 98: 461-464.
[7] Momeni AZ, Enshaieh S, Sodifi M and Aminjawaheri M. Multiple giant disseminated pyogenic granuloma in three patients burned by boiling milk. Int J Dermatol 1995; 34: 707-710.
[8] Ceyhan M, Erdem G, Kotiloğlu E, Kale G, Talim B, Kanra G and Başaran I. Pyogenic granuloma with multiple dissemination in a burn lesion. Pediatr Dermatol 1997; 14: 213-215.
[9] Durgun M, Selcuk CT, Ozalp B, Aydinol M and Alabalik U. Multiple disseminated pyogenic granuloma after second degree scald burn: a rare two case. Int J Burns Trauma 2013; 3: 125-129.
[10] Greene AK. Management of hemangiomas and other vascular tumors. Clin Plastic Surg 2011; 38: 45-63.
[11] Zhao HL, Huang S and Fu XB. Should pyogenic granulomas following burns be excised? Burns 2015; 41: 431-436.
[12] Mezdour L, Mansoul T, Boussaid R, Bariout A, Hassani L, Gherfi A, Bouhila A and Chehad AS. Deux cas de granulome pyogénique éruptif géant traités efficacement par bêtabloquant. Annales de Dermatologie et de Vénéréologie - FMC 2021; 1 Suppl 1: A165-A166.
[13] Liao WJ, Fan PS, Fu M, Gao TW, Liu YF and Ikeda S. Clinicopathological and ultrastructural study of multiple lobular capillary hemangioma after scalding. Dermatology 2006; 213: 34-36.
[14] Aliağaoğlu C, Bakan V, Atasoy M and Toker S. Pyogenic granuloma with multiple and satellite involvement after a burn in a 5-year-old child. J Dermatol 2006; 33: 150-152.
[15] Bozkurt M, Külahçi Y, Zor F and Aşkar I. Multiple giant disseminated pyogenic granuloma in a burn lesion. J Burn Care Res 2006; 27: 247-249.
[16] Diallo M, Niang SO, Kane A, Dieng M and Ndiaye B. Pyogenic granulomas with multiple satellites spontaneously resolved. Nouvelles Dermatol 2006; 25: 701-703.
[17] Ceyhan AM, Basak PY, Akkaya VB, Yildirim M and Kapucuoglu N. A case of multiple, eruptive pyogenic granuloma developed on a region of the burned skin: can erythromycin be a treatment option. J Burn Care Res 2007; 28: 754-757.
[18] Shirol SS, Nimbaragi G, Choukimath SM and Yenni VV. Lobular capillary hemangioma in a post-burn scar. Eur J Plast Surg 2013; 36: 323-326.
[19] Dastgheib L, Maghami Z and Aslani FS. Infantile multiple large pyogenic granuloma on burned skin. Case report and review of literature. An Bras Dermatol 2016; 91: 212-214.
[20] Xu Y, Li H, Wang ZX and Yang S. Multiple eruptive pyogenic granulomas occurring in a region of scalded skin. Pediatr Dermatol 2016; 33: e27-e28.
[21] Ashk Torab T, Tahereh A and Camelia R. Disseminated pyogenic granuloma without surgical intervention: a case report. Adv Nursing Patient Care Int J 2018; 1: 180004.
[22] Iraji F, Jelvan M, Ganjei Z and Rajabi P. Multiple disseminated pyogenic granuloma post-oil burning- review literature. Clin Case Rep 2021; 9: 169-172.
[23] Keshavarzi A, Dahmardehei M, Emami A, Ghadimi T and Bouzari B. Management of pyogenic granulomas following burn wounds. World J Plast Surg 2021; 10: 117-120.