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# Pigmented Poroma of the Lower Eyelid: A Case Report and Literature Review

## Authors' Contribution:

Study Design A  
Data Collection B  
Statistical Analysis C  
Data Interpretation D  
Manuscript Preparation E  
Literature Search F  
Funds Collection G

AEF 1 **Olga Bogomolets**   
EF 1 **Ewa Rojczyk**   
BD 2 **Roman Hryshchenko**   
BDE 2 **Catherine Bogomolets**   
BD 3 **Oleksandr Berezkin** 

1 Faculty of Medicine, Academy of Silesia in Katowice, Zabrze, Poland  
2 Department of Dermatology, Bogomolets Clinic, Lviv, Ukraine  
3 Department of Dermatology, Bogomolets Medical Laboratories: DERMATHLab, Kyiv, Ukraine

**Corresponding Author:** Olga Bogomolets, e-mail: [olga@bogomolets.com](mailto:olga@bogomolets.com)

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**Patient:** Female, 30-year-old  
**Final Diagnosis:** Eccrine poroma  
**Symptoms:** Fast growing eyelid lesion  
**Clinical Procedure:** Surgical excision  
**Specialty:** Dermatology

**Objective:** Unusual clinical course

**Background:** Eyelid tumors belong to a diverse group of neoplasms ranging from benign lesions to malignant tumors. Poromas are common, benign, mostly unpigmented tumors of the epidermal sweat duct unit, that usually grow slowly and occur in elderly people on the palms and soles. In most poroma cases some gene fusions were detected, which were caused by chromosomal aberrations.

**Case Report:** We report the atypical case of a 30-year-old female patient suffering for more than 15 years from a solitary, polypoid, pigmented formation with a focal tuberous surface on the left lower eyelid. The lesion was not growing during the first years, but in the last 6 months before diagnosis its size more than doubled, finally reaching 12×14 mm. It was removed and histopathological analysis confirmed the diagnosis of a rare tumor – a poroma. There were no complications during healing and no recurrence was reported.

**Conclusions:** There have so far been only 9 reports of eyelid poromas, and the presented case significantly differed from the previous ones, as it appeared at an early age and showed rapid growth during a short time due to the war-related acute psychological stress. Moreover, it had unusual pigmentation and unpleasant smell. Reporting such untypical cases is clinically important because it is crucial to be aware of the diversity of eccrine poroma manifestation to distinguish it from malignant lesions.

**Keywords:** Case Reports • Eyelid Neoplasms • Poroma

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## Background

A poroma is a benign neoplasm that can be of eccrine or apocrine origin and is histogenetically associated with the intraepidermal (acrosyringial) part of the excretory ducts of the eccrine sweat glands. The disease code according to ICD-10 is D23.9. Occurrence of this tumor on the eyelid is rather rare [1]. Poroma usually occurs in older patients, without a gender predominance [2,3] and the exact pathogenesis of this lesion is unknown [4]. After radical removal, the prognosis of any form of poroma is favorable [5]. It can occur together with other skin lesions (eg, verruca plantaris and acral lentiginous melanoma), creating combined pathologies that are difficult to diagnose [6,7].

Recent research has revealed a genetic background to this disease, showing that about 85% of poroma cases are related with the following gene fusions: YAP1-MAML2, MAML2-YAP1, YAP1-NUTM1, and WWTR1-NUTM1, which are a consequence of intrachromosomal inversions and translocations [8-10]. NUT

and transcriptional repressor GATA binding 1 (TRPS1) are potential molecular markers of poroma [11,12]. Ultraviolet radiation does not seem to be a key pathogenic factor in poroma development. Merkel cell polyomavirus (MCPyV) infection, existing malignancies, and organ transplantation history are important risk factors [9,13].

Our case is interesting because the neoplasm was localized on the lower eyelid at a young age (12-14 years). Other unusual characteristics of this clinical case were pigmentation, unpleasant smell, and the intense growth of the poroma, which coincided with significant acute stress because she was living in the area of military actions in Ukraine.

## Case Report

A 30-year-old female patient consulted a dermatologist with a solitary, polypoid formation with a focal tuberous surface and



**Figure 1.** Photographs of the left lower eyelid poroma showing tumor growth over time and a result of surgical treatment. (A) tumor in 2007 (15 years old patient), (B) tumor in 2021, (C) tumor in 2022 – pretreatment clinical photograph, (D) clinical macro photograph, (E) photograph 10 days after tumor resection.

almost diffuse pigmentation localized on the left lower eyelid, and the tumor had an unpleasant smell.

According to the patient, the lesion in the form of a small pigmented nodule appeared for the first time at the age of 12-14 years. At the time of its first occurrence, it was up to 5 mm in diameter. Over the next 15 years, it did not change much in size. However, over the past 6 months, its size more than doubled (**Figure 1A-1C**) and an unpleasant smell appeared. Thus, the patient visited the clinic for lesion removal.

Finally, the lesion grew to 12×14 mm, had a polyp-like appearance, and showed focal scaling and almost diffuse pigmentation, with burgundy to brown color (**Figure 1C, 1D**). The tumor was elastic and painless on palpation and there were no inflammatory changes.

### Treatment

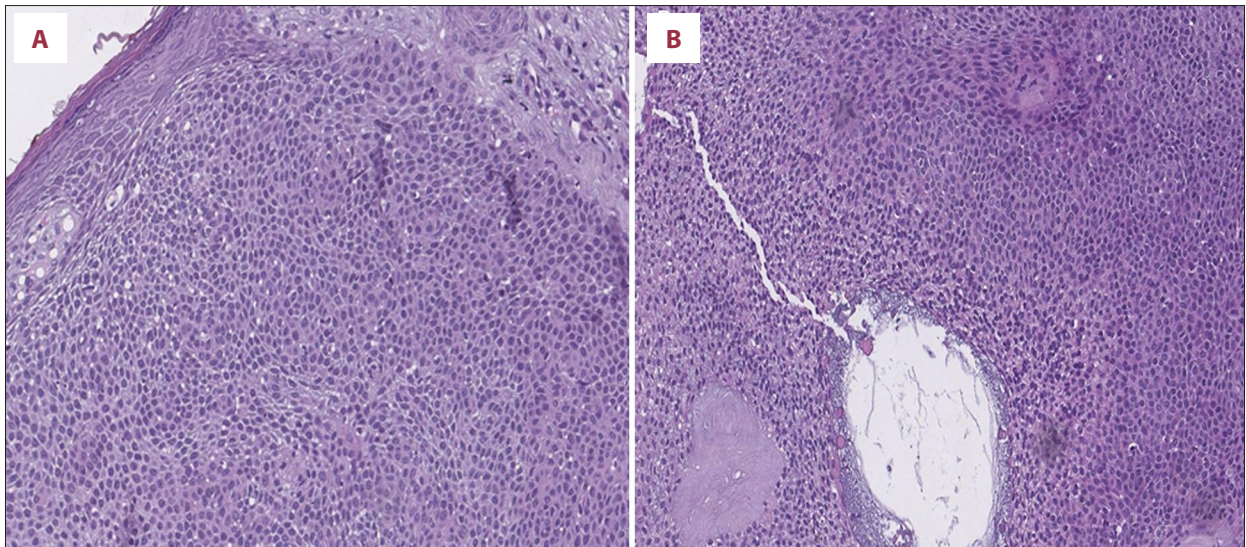
The removal of the tumor was carried out with the method of radio frequency wave, followed by histopathological examination using routine staining with hematoxylin and eosin (H&E). The healing proceeded without complications, within 10 days, by secondary intention. The patient was satisfied with the treatment and the aesthetic result (**Figure 1E**). No recurrence was reported within 9 months after surgery.

### Histopathology

Histopathological examination revealed a poroma. The main observation was the proliferation of epidermal cells with the formation of squamous bodies (**Figure 2**). Among the epidermal population, there were groups of cells with a small amount of eosinophilic cytoplasm and rounded hyperchromatic nuclei (poroid cells). Moreover, multiple corneal pseudocysts and single mucin-filled ductal structures were observed in a series of sections. The morphological architecture was consistent with eccrine poroma (ICD-O code 8409/0) with features of traumatization. However, the subtype of poroma (eccrine/apocrine) could not be determined. The clinical differential diagnosis was done with the seborrheic keratoma and no additional immunostaining was performed due to the lack of malignancy features.

### Discussion

Poromas can arise on any skin surface, but those arising from eccrine tissue are most commonly found on the palms, soles, and scalp. That is why poroma on the eyelid is a rare pathology [1]. Other recently reported rare localizations of eccrine poroma are right thigh (lesion diagnosed in 74-year-old Chinese woman) and right lateral foot (lesion diagnosed in 82-year-old African American man) [14,15].



**Figure 2.** Hematoxylin and eosine (H&E) staining (**A, B**) demonstrates fragment of skin, covered by focally irritated epidermis with neutrophilic infiltration and features of hyper-/parakeratosis, spongiosis, hypergranulosis, irregular acanthosis with elongated rete ridges and proliferated basaloid cells with further spreading into reticular derma. Among this cell population, small cuboidal cells with a slightly increased cytoplasm and ovoid hyperchromatic nuclei are identified. The cells are arranged in groups with the formation of acanthotic-like cords with anastomoses and ductal-like structures. Some keratinocytes show the phenomena of intracytoplasmic accumulation of melanin, which contributes to the general pigmented appearance of the formation. The underlying derma is composed of proliferating blood vessels of capillary size with perivascular lymphocytic infiltration, interstitial edema, and myxoid response in the background (H&E ×40).

**Table 1.** List of reported eyelid poroma cases. In all patients, the poroma was removed and no recurrences were recorded.

Ref.	Year	Sex	Age of tumor first occurrence/ excision	Final size (mm)	Course of illness	Histopathological description
11	2021	M	ND/63	ND	Left lower eyelid, growing for 3 months, erythematous, painless, no discharge	Ecrrine poroma
10	2020	M	55/70	40 (max dim.)	Right lower eyelid, slowly growing, reddish-pink, painless, no discharge	Ecrrine poroma
13	2020	M	50/58	10×10	Left upper eyelid (below temporal eyebrow), slowly growing, reddish-blue, painless, no discharge	Ecrrine poroma
2	2020	M	33/34	6×3	Left upper eyelid, slowly growing, skin-colored, tender, no discharge	Ecrrine poroma
7	2019	M	64/70	30×10	Right upper eyelid, initially multiple pea-size formations, gradually transformed into a single formation, brownish, painless, periodic secretions with an unpleasant smell	Intraepidermal ecrrine poroma
12	2008	F	ND/71	5 (max dim.)	Right lower eyelid, flesh-red, paresthesia, tearing, no discharge	Poroma
9	2008	M	90/91	4×5	Right lower eyelid, slowly growing, reddish-pink, painless, no discharge	Sebaceous differentiation ecrrine poroma
14	2001	M	63/71	15×13	Right lower eyelid, slowly growing, painless, no discharge	Ecrrine poroma
8	1986	F	40/70	10×10×9	Right lower eyelid, growing for 2 months, red, multiple fused vesicles	Folliculare ecrrine poroma

M – male; F – female; ND – no data; dim. – dimension; ref – reference.

The development of benign poroma is based on simple hyperplasia of epidermal cells of the sweat gland, associated with exposure to an unknown trigger without visual damage to the nearby skin. The pathological process is generally slowly progressing [5].

Poroma is usually non-pigmented (17% are pigmented variants) and underdiagnosed due to confusion with other pigmented tumors. Most frequently, poroma is confused clinically with basal cell carcinoma, squamous cell carcinoma, and cutaneous melanoma [16].

To date, there are only 9 reported cases of this tumor on the eyelids. We included the most important information about all reported clinical cases of the poroma (located in the periorbital zone) in **Table 1**, which compares the cases according to specific parameters.

We found some essential differences in our case of eyelid poroma in comparison to the generally accepted literature data, which may be important in facilitating diagnosis of this rare disease.

According to literature, all reported poromas occurred at an older age (mostly over 60 years) [2,17-24]. Thus, we show for the first time that the tumor can also appear in early adolescence (the patient was 12–14 years old). In our case, the lesion did not grow during the first 15 years and then very rapid tumor growth was observed – it doubled in size during about 6 months. This active growth coincided with the patient’s acute stress related to the war in Ukraine. Currently, the direct cause of such expansive growth is not known, but there is evidence that stress hormones promote the occurrence and development of tumors through various mechanisms [25].

Moreover, it should be noted that contrary to the information about the absence of sex predominance, our analysis (**Table 1**, together with our case) revealed that poroma of the eyelid was diagnosed more commonly in men than in women, with a male-to-female ratio 7: 3.

Finally, all diagnosed poromas were painless and only 2 cases (including ours) had a symptom of a bad smell. However, unlike the patient reported by Ahuja et al, in our case, there was

no secretion from the tumor or the nearest eccrine ductus [17]. Thus, we hypothesized that the tumor became too big and as a result, was adhesive to the skin. Consequently, it caused difficulties in skin breathing and hygiene, resulting in bad smell.

It is also very important to differentiate benign tumors from malignant ones. The fundamental difference between these types of tumors is the absence of atypia in the structure of the benign ones. In our case, no abnormal cells or asymmetric architecture (suggestive of the malignant nature of the lesion) were observed, so there was no need to perform additional immunostaining. However, in more complex and uncertain cases, immunostaining for carcinoembryonic antigen (CAE) is crucial to differentiate between benign and malignant lesions [26].

## Conclusions

Reported clinical case of eccrine poroma of the eyelid makes an important contribution to the diagnosis of skin cancer, not only due to its rare localization, but also because of its special

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features. Our case is the first that appeared during adolescence. It also stands out from others with its unusual pigmentation, the presence of an unpleasant smell, and extremely fast growth, which can be related to the patient's acute war-related psychological stress. There is a need to educate doctors of various specialties (including ophthalmologists) to make them aware that poroma may occur on the eyelids of patients of all ages. Specialists should also be familiar with its treatment, especially since it can be frequently confused with other benign and malignant tumors.

## Department and Institution Where Work Was Done

The work was done at the Faculty of Medicine, Academy of Silesia in Katowice.

## Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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