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Eyelid Tumors: Epidemiological Profile, Clinical Features, and Therapeutic Approaches: A Retrospective Study of 28 Cases at the University Hospital Center of Tangier-Tetouan-Al Hoceima

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Abstract | **Original Research Article**

Background: Eyelid tumors represent approximately 15% of all facial skin carcinomas. Their management requires a multidisciplinary approach combining oncology and reconstructive surgery. ***Objective:*** To describe the epidemiological, clinical, and therapeutic profile of patients with eyelid tumors in a Moroccan university hospital center. ***Methods:*** A retrospective descriptive study conducted at the Department of Reconstructive, Plastic, Aesthetic Surgery and Burns of Mohammed VI University Hospital Center in Tangier-Tetouan-Al Hoceima, over a 24-month period (April 2021 - March 2023). Demographic, clinical, histological, and therapeutic data from 28 patients were analyzed. ***Results:*** The mean age was 62.37 years (range: 8-80 years), with male predominance (sex ratio = 1.8). The majority of patients (67.86%) came from rural areas. Sun exposure was found in 100% of patients. The mean diagnostic delay was 18 months. Basal cell carcinoma dominated histology (75%), followed by adenoid cystic carcinoma (17.86%). The upper eyelid was affected in 75% of cases. Surgery was the treatment of choice: direct sutures (35.71%), temporal flap (50%), Mustarde flap (7.14%). Orbital exenteration was required in 50% of cases. External radiotherapy supplemented surgery in 7 patients. No chemotherapy was administered. ***Conclusion:*** Basal cell carcinoma remains the most frequent eyelid tumor in our series. Diagnostic delay remains concerning. Reconstructive surgery, particularly using flaps, allows satisfactory functional and aesthetic restoration. Increased awareness and early screening are essential.

Keywords: Eyelid tumor, basal cell carcinoma, reconstructive surgery, orbital exenteration, Morocco.

INTRODUCTION

The complex anatomy of the eyelid — a fine cutaneo-musculo-tarso-conjunctival structure covering the anterior part of the ocular globe — makes it an essential element for both ocular function and facial aesthetics [1]. Tumors developing in this region can have a significant impact, ranging from physical deformation to disruption of essential ocular functions [2].

Although less common than other types of malignant tumors, eyelid tumors represent approximately 15% of all facial skin carcinomas [3,4]. Well-documented risk factors include cumulative sun exposure, presence of precancerous lesions, and advanced age [2,3]. Basal cell carcinoma (BCC) is the most frequent histological type, representing 85% to 95% of malignant epithelial eyelid tumors in non-Asian countries [5].

Treatment relies mainly on three approaches: surgery, radiotherapy, and chemotherapy. However, surgical timing plays a crucial role, particularly for precancerous and cancerous lesions, as it is a determining factor for overall prognosis [3,4].

The objective of this study is to clarify the epidemiological profile of individuals suffering from eyelid carcinomas, to clarify therapeutic approaches, and to present the different reconstructive surgical techniques for treating tissue loss at the eyelid level.

MATERIALS AND METHODS

Study Design and Setting

A retrospective descriptive study conducted at the Department of Reconstructive, Plastic, Aesthetic Surgery and Burns of Mohammed VI University Hospital Center (CHU) in Tangier-Tetouan-Al Hoceima, Morocco.

Study Period: April 2021 to March 2023 (24 months).

Study Population: Twenty-eight (28) patients hospitalized for eyelid tumors.

Inclusion Criteria: All patients hospitalized in the department for eyelid tumors during the study period.

Exclusion Criteria

- Patients with locations other than the periorbital region.
- Advanced tumors beyond their therapeutic unit.
- Incomplete medical records.

DATA COLLECTION

Data were collected from a pre-established data collection form including:

- Epidemiological data (age, sex, origin, occupation)
- Clinical data (diagnostic delay, history, phototype, location, morphology)
- Paraclinical data (biopsy, CT scan, MRI)
- Histological data
- Therapeutic data (type of surgery, reconstruction, complementary treatments)

Statistical Analysis

Data were entered and analyzed using Excel 2016 software. Descriptive analysis focused on frequencies and percentages for qualitative variables, and on means for quantitative variables.

RESULTS

I. Demographic Characteristics

Age

The mean age at tumor discovery was 62.37 years, with a notable range from 8 to 80 years. The majority of cases (53.57%) were in the 60-79 years age group, suggesting that this pathology mainly affects elderly individuals. However, cases were reported in all age groups:

- 0-19 years: 3 cases (10.71%)
- 20-39 years: 1 case (3.57%)
- 40-59 years: 6 cases (21.43%)
- 60-79 years: 15 cases (53.57%)
- 80-99 years: 3 cases (10.71%)

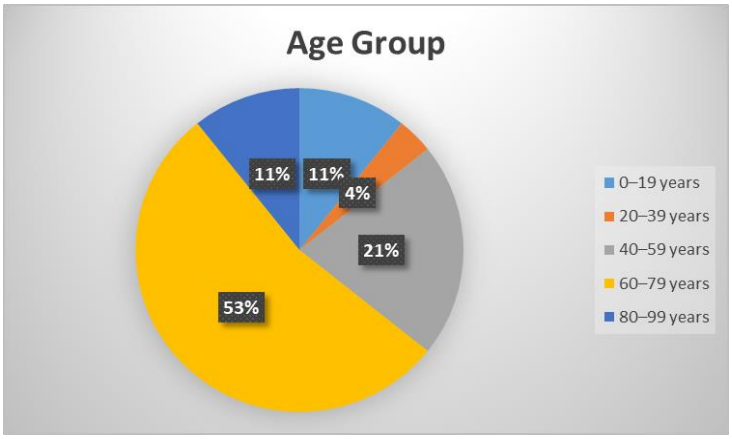

Figure 1: Age Group distribution

Sex

A male predominance was observed:

- Men: 18 cases (64.29%)
- Women: 10 cases (35.71%)
- Sex ratio (M/F): 1.8

The mean age at diagnosis was 65.3 years in men (range: 40-80 years) versus 57.5 years in women (range: 8-78 years), suggesting earlier diagnosis in women.

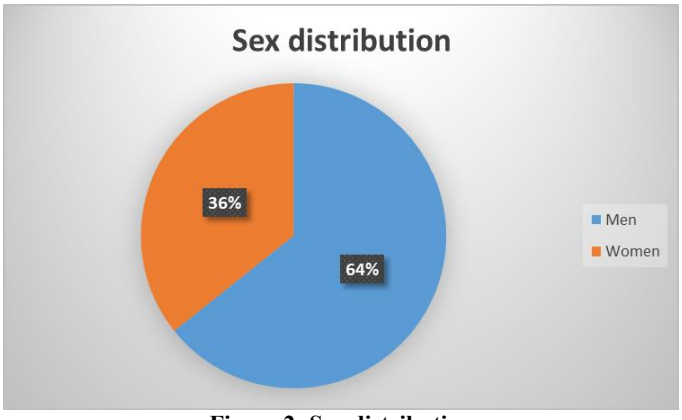

Figure 2: Sex distribution

Geographic Origin

- Rural area: 19 cases (67.86%)
- Urban area: 9 cases (32.14%)

II. RISK FACTORS AND MEDICAL HISTORY

Sun exposure during childhood and adolescence without adequate protection was present in all patients (100%), mainly linked to outdoor professional activity (64.3%).

Other identified risk factors:

- Chronic smoking: 14.3% (all male)
- History of basal cell carcinoma: 14.3%
- Hypertension: 14.3%
- Diabetes treated with oral antidiabetics: 10.7%

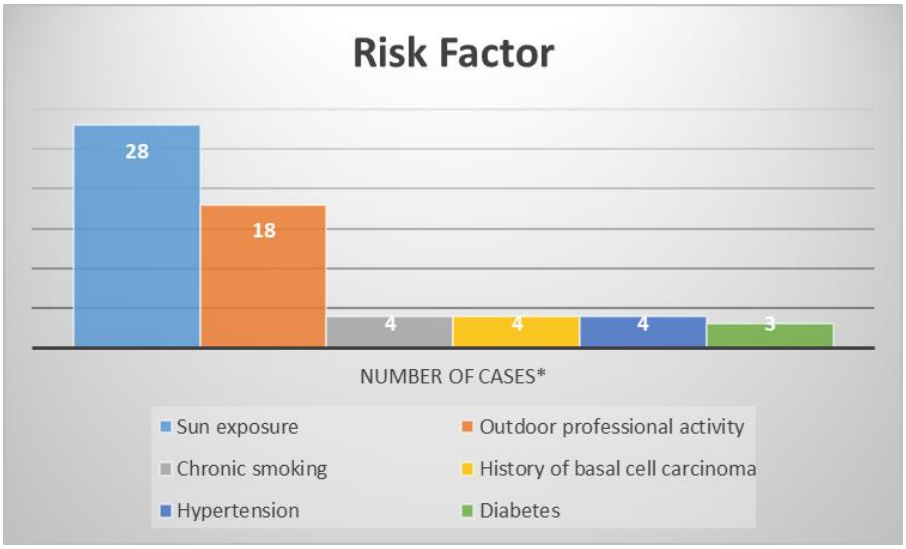

Figure 3: Identified Risk Factors

III. CLINICAL CHARACTERISTICS

Diagnostic Delay

The delay between symptom onset and medical consultation varied considerably, from 4 months to 3 years, with a mean of 18 months. More than half of the patients consulted only after 10 months from the appearance of the first clinical sign.

Phototype

- Phototype III: 18 cases (64.29%)
- Phototype IV: 7 cases (25.00%)
- Phototype V: 3 cases (10.71%)

Tumor Location

- Upper eyelid: 21 cases (75%)
- Lower eyelid: 7 cases (25%)

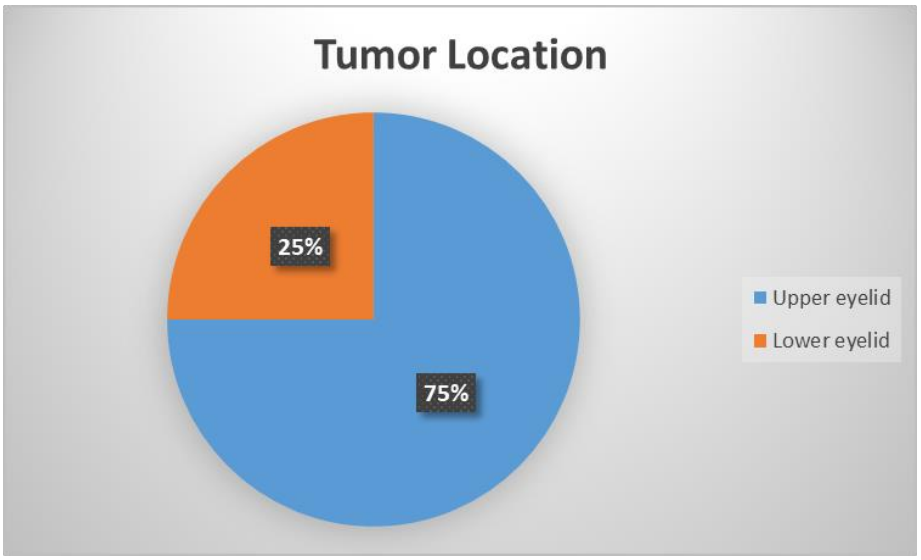

Figure 4: Tumor location

Affected Eye

- Left eye: 19 cases (67.86%)
- Right eye: 8 cases (28.57%)

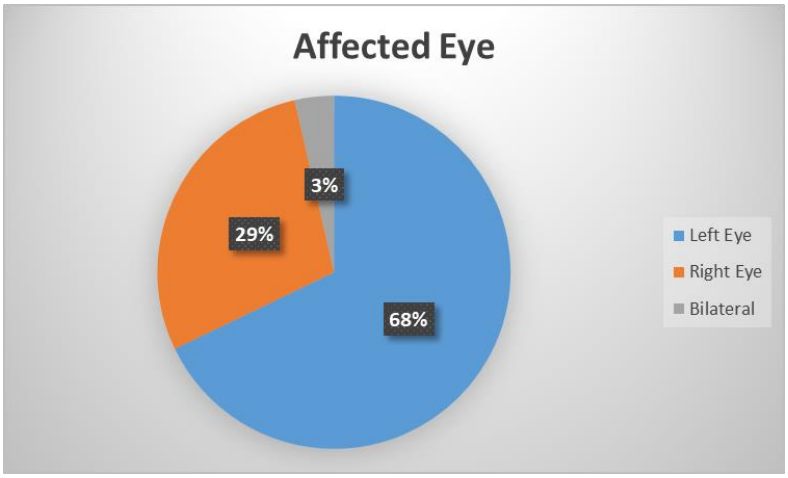

Figure 5: Affected Eye distribution

Morphology

- Ulcerated aspect: 14 cases (50.00%)
- Nodular aspect: 10 cases (35.71%)
- Ulcer nodular aspect: 4 cases (14.29%)

ENT Examination

No particularities were found in any of the patients. Lymph node areas (pretragal and submandibular) were free in all cases.

Table 1: Clinical Characteristics

Clinical Characteristics	Number of Cases (%)
Diagnostic Delay	4 months–3 years (mean: 18 months); >50% consulted after 10 months
Phototype III	18 (64.29%)
Phototype IV	7 (25.00%)
Phototype V	3 (10.71%)
Upper eyelid involvement	21 (75.00%)
Lower eyelid involvement	7 (25.00%)
Left eye affected	19 (67.86%)
Right eye affected	8 (28.57%)
Ulcerated morphology	14 (50.00%)
Nodular morphology	10 (35.71%)
Ulceronodular morphology	4 (14.29%)
ENT examination	No abnormalities; pretragal and submandibular lymph nodes free in all patients

IV. HISTOLOGICAL RESULTS

All patients underwent diagnostic biopsy:

- Basal cell carcinoma: 21 cases (75.00%)
- Adenoid cystic carcinoma: 5 cases (17.86%)
- Plexiform neurofibroma type 1: 2 cases (7.14%)

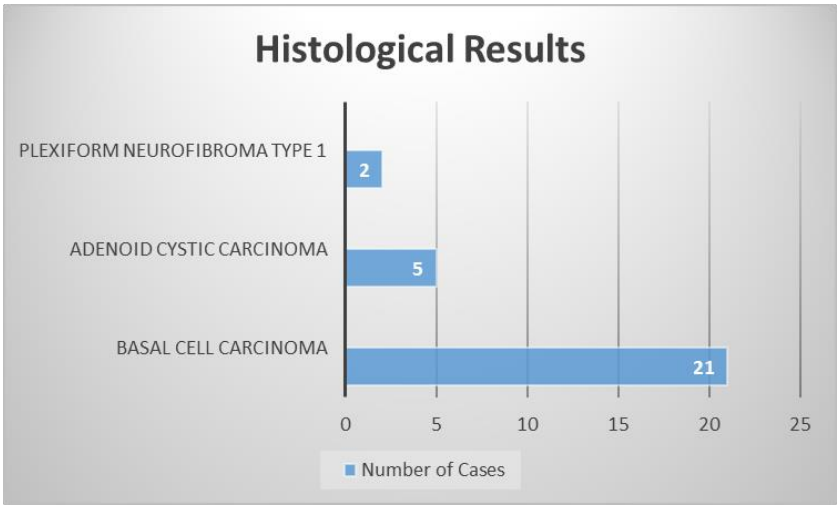

Figure 6: Histological results

Figure 7: a 70-year-old patient, chronic smoker, with no other significant medical history. The patient presented with a progressively enlarging tumor located on the free margin of the left upper eyelid, measuring 2 cm in greatest dimension and showing a pedunculated base. The lesion had evolved over a period of 2 years. A biopsy was performed

Figure 8: an 8-year-old girl followed for Neurofibromatosis Type 1. She presented with a palpable mass involving the left eyelid that had evolved over a period of 6 months. A preoperative computed tomography scan revealed tissue infiltration at the lateral canthus of the left eye

Figure 9: a 69-year-old female patient, with no significant past medical history, presented with an ulcerative and exophytic lesion of the lower eyelid, characterized by inflammatory and infiltrated margins. The lesion invaded the left eye and had evolved over a period of 2 years. A preoperative computed tomography scan showed extension of the tumoral process involving the lower eyelid, extending to the lateral canthus and the upper eyelid. In addition, the process had invaded the intraorbital region, involving the globe.

Figure 10: a 57-year-old patient, with no significant medical history, presented with an ulceration involving almost the entire left lower eyelid. The lesion had evolved over a period of one year. The patient was referred to our department by ophthalmology after a biopsy suggested a carcinomatous tumor proliferation

V. THERAPEUTIC MANAGEMENT

Surgical Treatment

- Direct sutures: 10 cases (35.71%)
- LLL flap: 2 cases (7.14%)
- Temporal flap: 14 cases (50.00%)
- Mustarde flap: 2 cases (7.14%)

No patient underwent lymph node dissection.

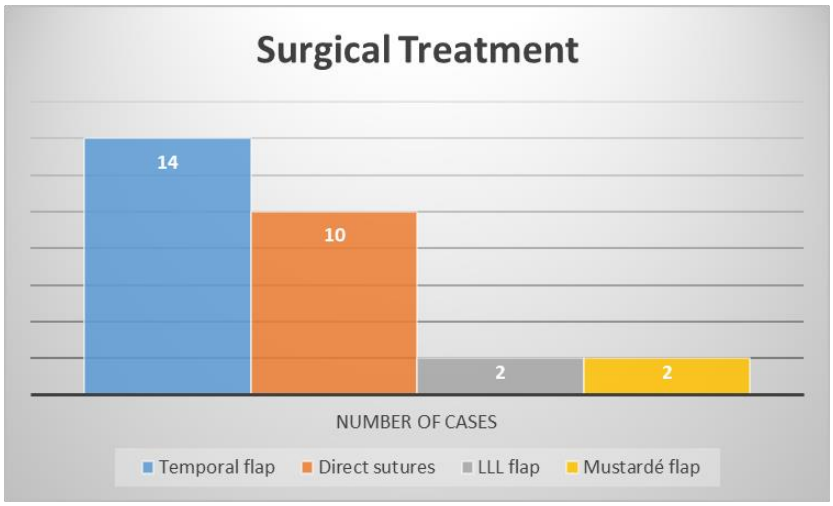

Figure 11: Surgical Treatment

Figure 12: Given a tumor involving more than half of the left lower eyelid, surgical excision was performed, followed by reconstruction using a Mustardé rotation temporojugal flap, reinforced with a conchal cartilage graft

Complementary Treatments

- External radiotherapy: 7 patients (as adjunct to surgery)
- Chemotherapy: 0 patients

Orbital Exenteration Rate

Orbital exenteration was required in 50% of cases in our series, a rate higher than that reported in the literature:

- Botha *et al.,* (Australia, 2018): 43.00%
- Lahlu *et al.,* (Rabat, 2009): 15.00%
- Drissi Bahi *et al.,* (Marrakech, 2021): 14.70%
- Our study (Tangier, 2023): 50.00%

Table 2: Therapeutic Characteristics

Therapeutic Characteristics	Number of Cases / Findings (%)
Direct sutures	10 (35.71%)
LLL flap	2 (7.14%)
Temporal flap	14 (50.00%)
Mustarde flap	2 (7.14%)
Lymph node dissection	No patient underwent lymph node dissection
External radiotherapy	7 patients (adjunct to surgery)
Chemotherapy	0 patients
Orbital exenteration rate	50.00%

Figure 13: The decision was made to perform an initial orbital exenteration, followed by a subsequent stage for reconstruction and soft-tissue coverage

DISCUSSION

I. EPIDEMIOLOGICAL PROFILE

Our mean age of 62.37 years falls within the range of international literature data. Botha *et al.,* in Australia (2018) reported a mean age of 67.42 years [6], while Poignet *et al.,* in France (2019) found a mean age of 74 years [7]. In Morocco, Drissi Bahi *et al.,*in Marrakech (2021) reported a mean age of 58 years [8].

The male predominance (sex ratio = 1.8) is probably explained by greater professional and recreational sun exposure in men, although these differences tend to diminish with changing lifestyles [9]. Historically, men are affected twice as often as women, with a current sex ratio of approximately 2.1:1 in the literature [9].

The overrepresentation of rural areas (67.86%) is explained by more frequent outdoor professional

activity (agriculture, livestock farming, fishing) and probably more difficult access to healthcare.

II. RISK FACTORS

Ultraviolet (UV) radiation exposure is the major risk factor for basal cell carcinoma [10]. Mutations in the TP53 tumor suppressor gene, induced by UV, are frequently observed in BCC lesions [10]. Intermittent intense UV exposure and long-term sun abuse are particularly harmful high-risk behaviors.

Other risk factors include family history of skin cancer, immunosuppressive status, previous irradiation, and exposure to toxic substances [10]. In our study, chronic smoking (14.3%), hypertension (14.3%), and diabetes (10.7%) were also present.

III. DIAGNOSTIC DELAY

The mean delay of 18 months between symptom onset and consultation is concerning, although lower than that reported in Australia by Botha *et al.,* (4.09 years) [6] and in France by Poignet *et al.,* (3.5 years) [7]. In Morocco, Drissi Bahi *et al.,* found a mean delay of 1.83 years in Marrakech [8]. These delays may be attributed to patient-related factors (denial, lack of awareness), healthcare system factors (inadequate access to primary care), and provider factors (suboptimal training or experience) [11].

IV. CLINICAL FEATURES

The predominance of the upper eyelid (75%) in our series contrasts with some studies. In Australia, Botha *et al.,* found a more balanced distribution [6], while in France, Poignet *et al.,* reported a marked predominance of the lower eyelid (76.6%) [7]. These variations may reflect differences in studied populations, regional risk factors, or research methodologies.

The predominance of the left eye (67.86%) is an interesting observation. Studies in Australia (57.14%) [6], France (64.20%) [7], and the United States (53.5%) [12] have also shown a left-sided predominance, the explanation for which remains to be elucidated (possibly related to asymmetric sun exposure during driving in left-hand traffic countries).

V. HISTOLOGY

Basal cell carcinoma (75%) largely dominates our series, consistent with international literature data where it represents 85% to 95% of malignant epithelial eyelid tumors in non-Asian countries [5]. However, the frequency of adenoid cystic carcinoma (17.86%) in our series is notable and deserves attention, as this tumor type is generally rare.

VI. THERAPEUTIC MANAGEMENT

Surgery remains the treatment of choice for eyelid tumors [13]. The fundamental principles include:

1. Cure the patient through complete tumor excision
2. Preserve eye function
3. Obtain a satisfactory aesthetic result

Recognized safety margins are 3 to 5 mm for BCC, up to 10 mm for ulcerated or sclerodermiform forms, and 8 to 10 mm for squamous cell carcinoma [14].

In our series, the temporal flap was the most used reconstruction technique (50%), followed by direct sutures (35.71%). The temporal flap offers the advantage of great mobility and robustness, allowing coverage of extensive tissue losses [15].

Orbital exenteration, although disfiguring, remains the most commonly used method for treating orbital tumor invasions [16]. Our high rate (50%) suggests late diagnosis and significant locoregional extension at the time of management.

External radiotherapy was used as adjunctive treatment in 7 patients. It is particularly appropriate for basal cell and squamous cell carcinomas due to their radiosensitivity [17]. However, it can cause various ocular complications (post-radiation cataract, keratitis, ectropion) requiring rigorous ocular protection [17].

VII. PREVENTION

Patient education is essential in preventing recurrence. Recommendations include:

- Avoid sun exposure, particularly between 11 a.m. and 3 p.m.
- Wear sun-protective clothing (wide-brimmed hat, UV-protective sunglasses)
- Regularly apply broad-spectrum sunscreen (SPF >= 30)
- Perform regular skin self-examinations

Intensive sun protection before the age of 18 can reduce non-melanoma skin cancer by 78% [18].

CONCLUSION

This retrospective study of 28 cases of eyelid tumors at the CHU of Tangier-Tetouan-Al Hoceima highlights several essential points:

1. Basal cell carcinoma remains the most frequent eyelid tumor (75%), with predominance of the upper eyelid.
2. The epidemiological profile shows male predominance, a mean age of 62.37 years, and overrepresentation of rural areas.
3. Diagnostic delay remains concerning (mean delay of 18 months), contributing to locoregional extension and the need for orbital exenteration in 50% of cases.
4. Reconstructive surgery, particularly using flaps (temporal, Mustarde), allows satisfactory functional and aesthetic restoration.
5. Increased public awareness, particularly in rural areas and among outdoor workers, as well as

early screening, are essential to improve prognosis.

6. The development of Mohs micrographic surgery, still poorly accessible in our context, could help reduce recurrence rates while preserving healthy tissue.

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