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Original Research Article

Benign adnexal neoplasms of the skin: a 6-year histopathological review

José G. García Acosta*, Marissa D. Quintal Ramírez

Hospital de Especialidades Centro Médico Nacional La Raza "Dr. Antonio Fraga Mouret", Instituto Mexicano del Seguro Social, México City, México

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***Correspondence:**
Dr. José G. García Acosta,
E-mail: jgustavo.garcia@hotmail.com

ABSTRACT

Background: Tumours of the cutaneous appendages of the skin are a class of benign and malignant dermatological neoplasms, which present special morphological differentiation such as glandular, pilar or sebaceous.
Methods: A descriptive, observational, retrospective, and cross-sectional study focused on the histopathological diagnoses corresponding to benign neoplasms of the cutaneous appendages reported in the La Raza National Medical Center, México. For statistical analysis, descriptive statistics were used, with frequency distribution, percentage, mean, median.
Results: A total of 8,618 skin biopsy reports were analyzed. Of these, 222 were diagnoses of benign adnexal neoplasms. The prevalence was 2.57%. Of the total, 59.9% occurred in women and 40.1% in men. The median age was 56.9 years; in an age range from 61 to 70 years old. The most frequent anatomical location was the nose with 20.3%, followed by the lower extremities with 18.9%. Neoplasms with apocrine and eccrine differentiation were the most common, representing 55.9% of cases. Poroma was the most common subtype in our study, accounting for 19.37% of cases, followed by pilomatrixomas and trichodiscomas, both accounting for 15.77%.
Conclusions: Benign adnexal neoplasms of the skin have a prevalence of 2.57%. They occurred mostly in women aged 61 to 70 years. The most common adnexal tumor was poroma, and the most common location of appearance was the nose.

Keywords: Neoplasms, Adnexal and skin appendage, Skin, Tumours

INTRODUCTION

Tumours of the cutaneous appendages of the skin are a class of benign and malignant dermatological neoplasms, which present special morphological differentiation such as glandular, pilar or sebaceous.[1-3] These types of neoplasms are considered to be of low frequency and represent a diagnostic challenge in both dermatology and pathology. Therefore, the field of study of these tumors should be expanded by establishing general registries with significant statistical significance, rather than limiting the reporting of isolated cases.[4,5]

Based on the above observations, this 6-year review was undertaken at the Hospital de Especialidades Centro Médico Nacional La Raza "Dr. Antonio Fraga Mouret" specialty hospital. First, a comprehensive review of the Latin American literature revealed a 2009 study conducted at the Centro Médico de Córdoba in Colombia, reporting 200 patients diagnosed with this type of neoplasia. 47% were follicular tumours, 42% were eccrine and apocrine tumours, and 11% were sebaceous tumours. [6]

In the Mexican national bibliography, in 2021 a study was carried out at the general hospital of Mexico, of 20 years where the histopathological characteristics of adnexal cutaneous neoplasms in the pediatric population are described, with a total of 84 cases included, the

female sex was the most affected and the most frequent adnexal tumour was pilomatrixoma.[7]

Similarly, in Mexico and with a focus on the adult population, there are only reports of this type of neoplasm from its malignant counterpart, as did Sánchez-Morales et al where they addressed a case report of a porocarcinoma.[8] Also a study by Fernández Díez, at the Hospital de Oncología del Centro Médico Nacional Siglo XXI, where he addresses a report of 247 cases of malignant neoplasms of cutaneous annexes.[9]

The diagnostic importance of this type of neoplasia has clinical significance for treatment and prognosis for the patient, since due to its histological nature and adding the factor of interobserver variability, it can be misdiagnosed with other malignant neoplasias such as basal cell carcinoma and melanomas.[10]

Considering the rarity of these types of neoplasms, their diagnostic complexity, and their limited epidemiological spread, in addition to the fact that the hospital receives a high volume of biopsies, the necessary elements were available to conduct this study.

The objective of this study was to determine the prevalence of benign adnexal neoplasms, identify their histological subtypes, and the relevant epidemiological aspects associated with them.

METHODS

A descriptive, observational, retrospective and cross-sectional study was performed. The study was conducted in the Pathological Anatomy Service of the Hospital de Especialidades Centro Médico Nacional La Raza "Dr. Antonio Fraga Mouret" from January 2017 to December 2022.

Before starting the study, ethical approval was obtained from the local health research committee 3501 (Institutional registration number R-2023-3501-111, dated July 11, 2023).

Selection criteria

The selection criteria included histopathological reports of skin biopsies with a diagnosis of any of the benign adnexal neoplasms of the skin analyzed in from January 1, 2017, to December 31, 2022, of any sex and age.

Exclusion criteria were histopathological reports with a diagnosis other than one of the benign adnexal neoplasms of the skin, indeterminate diagnosis, and incomplete diagnosis.

Study selection

The diagnoses of all histopathological reports issued during the stipulated period were reviewed and the reports that met the predefined selection criteria were obtained for review. Subsequently, full articles were examined for inclusion or exclusion and data extraction.

Data extraction

The selected studies were reviewed and data were manually summarized.

Data was input into a Microsoft Excel spreadsheet, which encompassed details about patients, including their age and gender, as well as features of the benign adnexal neoplasia, such as type, subtype, and lesion location. This information was categorized according to the year the report was generated.

Statistical analysis

The database created in excel was analyzed using IBM SPSS statistics. The analysis was descriptive, qualitatively using percentages and proportions, and quantitatively using central tendency analysis such as mean, median, and mode.

RESULTS

During the period from January 1, 2017 to December 31, 2022, a total of 8,618 skin biopsy reports were registered in the department of pathology, of which 222 biopsies were identified as benign adnexal neoplasms of the skin. Therefore, the prevalence of benign adnexal neoplasms during the stipulated period was 2.57%.

Of the total reports produced, the frequency for each year analysed for the annual productivity assessment was presented (Figure 1).

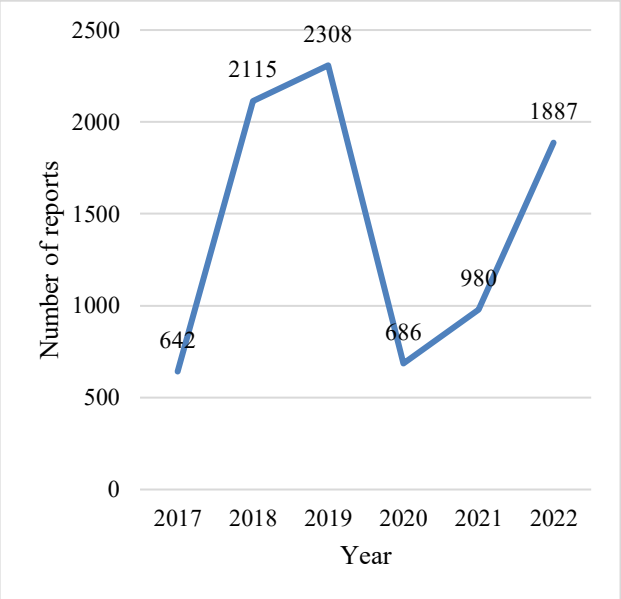

Figure 1: Linear graph representing the total number of reports per year from 2017 to 2022.

Of the 222 reports analysed, 133 were women, representing 59.9%, and 89 were men, representing 40.1% (Table 1).

Table 1: Number and percentage of patients according to sex.

Gender	N	Percentages (%)
Female	133	55.9
Male	89	40.1
Total	222	100

Regarding the age at presentation, the average was 56.9 years. Of the 9 age groups, the one with the largest number of members was 61-70 years with 60 patients (27.03%), followed by 71-80 years with 34 patients (15.32%), 51-60 years with 34 patients (15.32%), 5-18 years with 30 patients (13.51%), 81-90 years with 24 patients (10.81%), 41-50 years with 22 patients (9.91%), 31-40 years with 9 patients (4.05%), 19-30 years with 5 patients (2.25%), and 91-100 years with 4 patients (1.80%) (Figure 2).

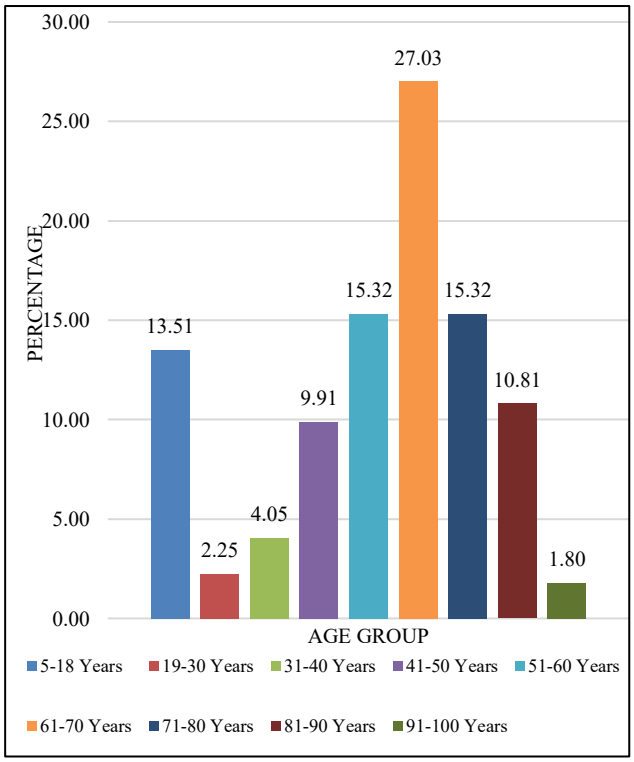

Figure 2: Percentage of patients with annexial neoplasm according to age group.

Regarding topography, the most frequent anatomical site was the nose with 45 patients (20.3%), second place the lower extremities with 42 patients (18.9%), third place the eyelids with 34 patients (15.3%), fourth place the scalp with 19 patients (8.56%), fifth place the upper extremities with 18 patients (8.11%), sixth place the cheeks with 16 patients (7.21%), seventh place the trunk with 15 patients (6.76%), eighth place the auricles with 13 (5.86%), ninth place "unspecified site" with 9 patients (4.05%), tenth place the forehead with 8 patients (3.6%) and last place the neck with 3 patients (1.35%) (Figure 3).

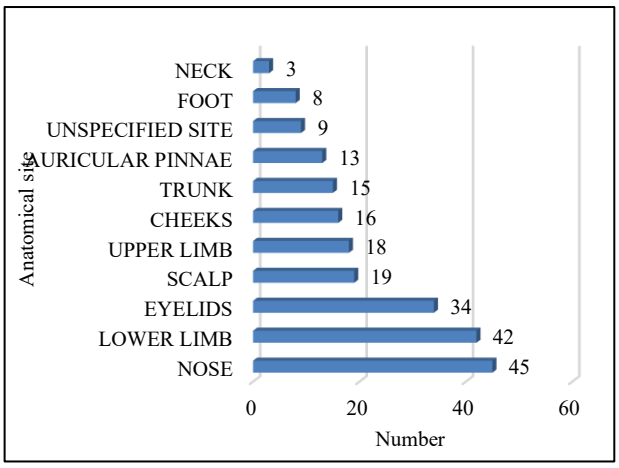

Figure 3: Number of cases according to the topography of the tumours.

In relation to the world health organization's international classification of benign adnexal neoplasms of the skin, neoplasms with apocrine and eccrine differentiation were found to be in first place with 124 diagnoses (55.9%), followed by neoplasms with follicular differentiation with 90 diagnoses (40.5%), and in third place by neoplasms with sebaceous differentiation with 8 diagnostics (3.6%) (Table 2).

Table 2: Number and corresponding percentage of cases of benign adnexal tumours according to their histological origin.

Variables	N	Percentages (%)
Neoplasms with apocrine and eccrine differentiation	124	55.9
Neoplasms with follicular differentiation	90	40.5
Neoplasms with sebaceous differentiation	8	3.6
Total	222	100

In terms of histological classification, the most frequently observed subtype was poromas, found in 43 individuals (19.37%). Following closely were pilomatrixomas and trichoblastomas, each present in 35 patients (15.77%). Hydrocystadenomas ranked third, identified in 28 patients (12.61%), while spiradenomas came in fourth with 19 patients (8.56%). In fifth place, trichilemomas were noted in 12 cases (5.41%), and sixth were cylindromas, occurring in 10 patients (4.50%). Hidradenomas were represented in seventh place with 9 patients (4.05%), whereas mixed tumors appeared in eighth position with 7 patients (3.15%). Syringocystadenoma papilleferum was recorded in ninth place with 5 patients (2.25%), and sebaceous adenomas

were documented in tenth place with 4 patients (1.80%). Similarly, sebaceomas and trichofolliculomas were each found in 4 patients (1.80%). In eleventh place was trichodiscoma, noted in 3 patients (1.35%), followed by syringomas in twelfth place with 2 patients (0.90%). Lastly, both myoepithelioma and hair sheath acanthoma were identified, each occurring in 1 patient (0.45%). (Table 3).

Table 3: Frequency of benign adnexal neoplasms by histological subtype.

Adnexal neoplasms	N	Percentage (%)
Poroma	43	19.37
Pilomatrixoma	35	15.77
Trichoblastoma	35	15.77
Hydrocystoadenoma	28	12.61
Spiradenoma	19	8.56
Trichilemmoma	12	5.41
Cylindroma	10	4.50
Hydradenoma	9	4.05
Mixed tumor	7	3.15
Syringocystadenoma papilleferum	5	2.25
Sebaceous adenoma	4	1.80
Sebaceoma	4	1.80
Trichofollicolma	4	1.80
Trichodiscoma	3	1.35
Syringoma	2	0.90
Myoepithelioma	1	0.45
Hair sheath acanthoma	1	0.45
Total	222	100

In microscopic analysis, all corresponded to their histological lineage and benign nature.

DISCUSSION

In the current research, out of a total of 8,618 reports examined, 222 cases were identified as benign adnexal neoplasms of the skin, resulting in a prevalence rate of 2.57%. Unlike the study by González et al which reported 36 cases of adnexal cutaneous tumours with a prevalence of 1.4%, our study, due to the larger number of patients, has a greater statistical impact.[11] In a further study conducted by Yaqoob et al 166 skin appendage tumours were identified over a 5-year period; although their prevalence was not reported, the number of cases found was still lower than that observed in our study.[12] The results showed a preference for women in 59.9% of cases; this is consistent with the study conducted by González et al in which women also predominated. However, they attribute this factor to the reason for aesthetic consultations related to this type of neoplasms. Similarly, in another study conducted by Ireland et al which examined 559 cases, it was found that 60.1% were women.[11,13] Regarding age, it is evident that they can appear at any stage of life; in our study, the mean age was 56.9 years. This finding is consistent with Bürgesser et al who, in a similar study in 2009, reported a bimodal peak of 18.5% in the second and fifth decades of life; however, Cook et al mention in their review that the mean age at presentation was 55 years; a finding that aligns with the outcomes seen in the current research.[14]

The anatomical location where most cases were observed was the nose, with 20.3%, followed by the lower extremities, which reached 18.9% of presentations. This finding is consistent with Samaila's study, in which the predominant anatomical site was recorded in the head and neck region, with 46%.[15] It has been suggested that this may be attributable to the large number of follicle-sebaceous units and sweat glands that are histologically concentrated in this area as opposed to other dermatological areas.[16] According to their histological origin, the most frequent type of tumours were neoplasms with apocrine and eccrine differentiation with 124 diagnoses (55.9%), in second place were neoplasms with follicular differentiation with 90 diagnoses (40.5%) and in third place were neoplasms with sebaceous differentiation with 8 diagnoses (3.6%). The most common subtypes in our study were poroma (19.37%), followed by pilomatrixomas and trichoblastomas (15.77%) of follicular origin (Figures 4-6).

Figure 4: Eccrine poroma.
Eccrine poroma. 10X magnification. Hematoxylin-eosin. Circumscribed lesion composed of small, monomorphic cells with round, basophilic nuclei and compact, pigmented eosinophilic cytoplasm.

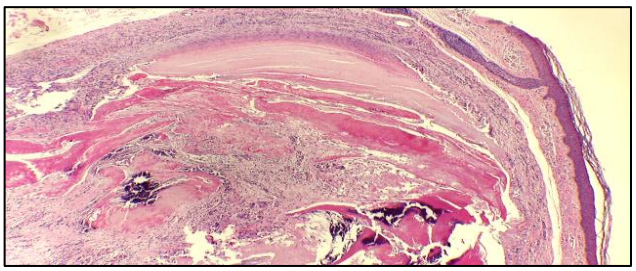

Figure 5: Pilomatrixoma.
Pilomatrixoma. 10X magnification. Hematoxylin-eosin. Intact epidermis with a dermal tumour composed of basaloid cells and ghost cell shadows with inflammation and the presence of multinucleated foreign-body giant cells. Central basophilic zones corresponding to calcification.

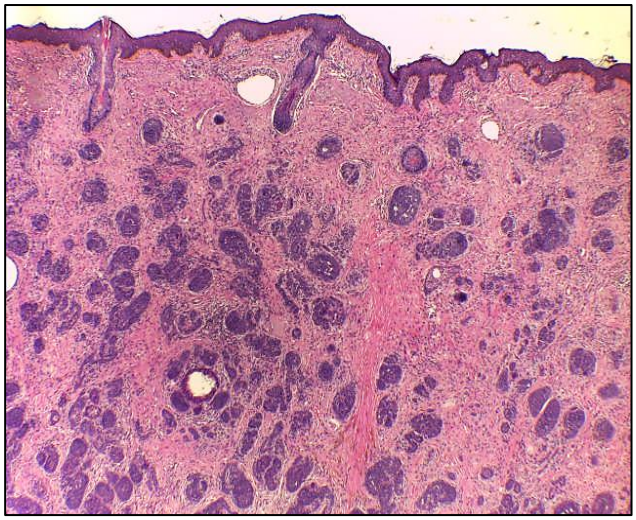

Figure 6. Trichoblastoma.
Trichoblastoma. 10X magnification. Hematoxylin-eosin. Predominantly basaloid epithelial cells in peripheral palisading nests in a fibrous cellular stroma.

In the study by González et al trichoepitheliomas were the most common with 30.56% followed by Hidradenomas with 19.44%.[11] In the studies by Cook et al the most common tumour was Hidrocystoma with 492 of 1570 tumours representing 31.33%, followed by pilomatrixoma with 19.49%.[14] In the studies by Yaqoob et al and Samaila in Hidradenoma was reported as the most common tumour with 78.8% and 45.16% respectively.[12,15]

This is why it is novel in our study that in this segment of the Mexican population, Poromas were the most common adnexal tumours, compared to the studies mentioned above.

In the 2022 study by Muñoz et al the term "pandemic iatrogenesis" was proposed, which refers to the neglect and inadequate health care caused by the prioritization of COVID-19 care, reflected in the decrease in medical consultations and non-urgent surgical interventions.[17]

Defining this point is justified in the following section.

Limitations

Therefore, the impact of the COVID-19 pandemic was evident in the present study with a decrease in the number of skin biopsies between 2020 and 2021, with 686 and 980 respectively compared to the other years analysed; a condition that was considered a limitation of the study. Another limitation of the study was the wide variability in the nomenclature used for these types of neoplasms, due to the fact that they are used as synonyms in histopathological reports. For example, some reports were found in which Cylindroma was referred to as a synonym, turban tumour, and others in which pilomatrixoma was referred to as Malherbe's calcifying epithelioma. There are entities described with different names to refer to the same tumor, which are sometimes confusing; as well as classification schemes used by different authors that seem quite contradictory.[18] In accordance with the above, we suggest the use of the nomenclature recommended by the world health organization's tumour classification in its recent edition to unify diagnoses.[3] An additional constraint of the research was identified, as nine reports lacked clarity regarding the specific anatomical location from which the biopsy was obtained ("Unspecified site"). Lacking the exact topography of the biopsy, this creates bias in the data obtained and creates clinical uncertainty.

CONCLUSION

Benign adnexal tumours represent 2.57% in Mexican population, which is higher than the prevalence reported in the literature. Neoplasms with apocrine and eccrine differentiation were the most common, with poroma being the most common adnexal tumour, followed by pilomatrixoma and trichoblastoma. The most common topography was the nose, followed by the lower extremities. The impact of the COVID-19 pandemic was evident in the present study with the decrease in the number of skin biopsies. The use of the world health organization's tumour classification is suggested to unify diagnoses and thus reduce the confusing variability of non-recommended names. Our study highlights the importance of clinical data for biopsy analysis. These data, such as age, sex, patient symptoms, and, in our case, biopsy site, help the pathologist correlate the appearance of cells and tissues with the patient's clinical condition, allowing for a more accurate diagnosis. Our findings support a higher prevalence of these neoplasms than those reported in the literature, thus representing an important contribution to national and international epidemiology. This is why benign adnexal neoplasms of the skin, although they have a low frequency of presentation, have a high clinical importance in dermatology.

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