

Cutaneous horn: a retrospective histopathological study of 222 cases*

Corno cutâneo: estudo histopatológico retrospectivo de 222 casos

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Abstract: BACKGROUND: Cutaneous horn is a keratotic, conical and circumscribed lesion that can hide both benign or malignant lesions.

OBJECTIVE: To identify, from a histopathological point of view, the main clinical dermatoses that are presented, from a clinical point of view, as cutaneous horn.

METHODS: RETROSPECTIVE HISTOPATHOLOGICAL STUDY OF 222 CASES OF CUTANEOUS HORNS THAT WERE CLASSIFIED AS SUCH BY ANATOMICAL-PATHOLOGICAL REPORTS OF THE UNIVERSITY HOSPITAL (HOSPITAL DE CLÍNICAS DE UBERLÂNDIA) FROM 1990 TO 2006.

RESULTS: The average age of patients was 67,42. The female sex was more affected (64,86%). The average time of clinical evolution was 16,92 months. Lesions were mostly frequent located on the head (35,14%) and upper limbs (31,08%). Histopathological analysis considered 41,44 % of the lesions as benign and 58,56% as pre-malignant or malignant among the 222 cases of cutaneous horns studied. Within the group of pre-malignant lesions, actinic keratosis was found in 83,84% of the cases; within the group of malignant lesions, squamous cell carcinoma was found in 93,75% of the cases.

CONCLUSIONS: This study showed that the majority of cutaneous horns occurred in areas of the body that are exposed to the sun, predominantly head and upper limbs. Considering the high frequency of pre-malignant lesions and also the presence of malignant lesions it is suggested surgical exeresis followed by histopathological study of the cutaneous horns for confirmation of specific diagnosis.

Keywords: Pathology; Skin diseases; Skin neoplasms

Resumo: FUNDAMENTOS: O corno cutâneo é lesão acentuadamente hiperqueratótica, cônica e circunscrita, que pode ocultar tanto lesões benignas como malignas.

OBJETIVO: Identificar histopatologicamente as principais dermatoses que se apresentam clinicamente como corno cutâneo.

MÉTODOS: Estudo histopatológico retrospectivo de 222 cornos cutâneos, a partir de laudos anatomopatológicos do Hospital de Clínicas de Uberlândia entre os anos de 1990 e 2006.

RESULTADOS: A média de idade dos pacientes foi de 67,42 anos. O sexo feminino foi mais acometido (64,86%). O tempo médio de evolução foi de 16,92 meses. As localizações mais frequentes das lesões foram: cabeça (35,14%) e membros superiores (31,08%). Observaram-se lesões histopatologicamente benignas em 41,44% e lesões pré-malignas ou malignas em 58,56% dos cornos cutâneos estudados. Entre as lesões pré-malignas, a queratose actínica foi encontrada em 83,84% dos casos; entre as malignas, o carcinoma espinocelular correspondeu a 93,75% dos casos.

CONCLUSÕES: Este estudo mostrou que a maioria dos cornos cutâneos surgiu sobre áreas do corpo expostas à luz solar, predominantemente, cabeça e membros superiores. Considerando-se a elevada frequência de lesões pré-malignas e também a presença de lesões malignas, sugere-se exérese cirúrgica seguida de estudo histopatológico dos cornos cutâneos, para confirmação de diagnóstico específico.

Palavras-chave: Dermatopatias, Neoplasias cutâneas, Patologia

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INTRODUCTION

The expression cutaneous horn (*cornu cutaneum*) is the morphological designation for the conical, predominantly keratotic protuberance similar to the horn of an animal^{1,3}. Primary diagnosis, in most cases, is suggested by the aspect and clinical development of the lesions⁴ that can be one and only or multiple, of white or yellowish⁵ staining, straight or curve forme occurring usually in regions exposed to the sun, especially the face⁶⁻⁸.

From a histopathological point of view lesions can be classified as benign, premalignant and malignant⁹⁻¹³ according to the cellular pattern on the basis of the cutaneous horn. In general, malignant lesions tend to be harder on their bases due to inflammatory process^{5,14,15}. The presence of malignant lesions in other parts of the body of patients increases largely the probability of the basis of the cutaneous horn to present premalignant or malignant^{1,16,17} alterations.

The age group in which cutaneous horn is most prevailing is above 50 years of age, for both sexes^{1,15-17} and the average age for the occurrence of lesions in patients with premalignant and malignant lesions is around six years more than that of patients with benign alterations¹⁵.

It is more commonly observed the appearance of cutaneous horns in the regions of the body closer to the higher areas of the face and next to the external ear⁴. It also occurs on the scalp, upper limbs, stem, lower limbs and penis, although in a smaller scale^{16,18-23}.

The procedure used for the treatment of cutaneous horn is surgical excision followed by histopathological examination for confirmation of specific diagnosis^{5,7,16,17,24,25}. This procedure is indicated not only because it is an immediate treatment but also because it considers the possibility of the existence of a premalignant or malignant lesion on the basis with developmental tendencies. The surgical excision should be as conservative as possible and should also guarantee a sufficient security margin^{8,26,27}.

Some studies of histopathological lesions clinically identified as cutaneous horns showed predominance of benign lesions^{1,15,17,28} while others showed a predominance of a malignant or premalignant^{17,29} substratum.

The fact that there is little research being carried out about the theme, the developmental characteristic of the disease and the fact that there is a connexion between the disease and malignant tumours motivated the accomplishment of this study.

Besides that, an epidemiologic study could efficiently and objectively contribute to an early diagnosis and to the development of preventive models.

The present study is a retrospective study that aims at recognising the histopathologic lesions on the

basis of cutaneous horns found in patients who sought for medical assistance in the Dermatology service of the University Hospital (Hospital de Clínicas de Uberlândia) during the period 1990 to 2006. It also aims at delimiting an epidemiologic profile of patients that presented a clinical-histopathologic diagnosis of cutaneous horn within the previously mentioned period.

METHODS

Medical reports of patients who had clinical diagnosis and had had surgical excisions of cutaneous horn lesions and also that had had their respective histopathologic reports and plates reviewed, during the period 1990 to 2006 were analyzed.

A standardized card was designed for this study and it contained data collected from patients' records such as age; sex; gradual development of the disease; diameters of the base and height of the lesions; probable etiological diagnosis and the coexistence of premalignant or malignant lesions. As information about the diameter of the base and height of the lesions had not been recorded in the control cards of patients, they were measured through microscopic histopathologic analysis of plates.

Data obtained was analysed, related and made available for visual display in charts/tables and graphs, using computer software (Microsoft Word and Microsoft Excel).

Qualitative data was presented in terms of absolute frequency and percentage frequency and the results of the survey were also presented in tabular form considering absolute and average deviation and standard deviation.

As for age, D'Agostino and Kolmogorov-Smirnov tests were used.

As for the distribution of nonparametric values (gradual development of the disease, height and base of the lesions) were used the median and first quartile (or lower quartile) and third quartile (or upper quartile). Q-statistic was used to verify the possible associations among variables using the BioEstat 5.0 software, considering as significance level $p < 0,05$.

RESULTS

Out of a total number of 21.085 cutaneous biopsies carried out during the period 1996 to 2000, 304 (1,44%) had previous clinic diagnosis of cutaneous horn although histopathologic exams confirmed as cutaneous horns 222 lesions of 211 patients. All data from this research refer to those 222 lesions with a histopathologic definition of cutaneous horn.

Within the 222 lesions, 92 cutaneous horns (41,44%) presented benign histopathologic alter-

ations on their bases being the most frequent: viral wart (29; 31,52%), keratic acanthoma (24; 26,09%), keratosis seborrhoica (20; 21,74%), benign epithelial hyperplasia (6; 6,52%), trichilemmoma (3; 3,26%) and others (10; 10,87%) (Graph 1). One hundred and fourteen lesions (51,35%) were premalignant and 16 (7,21%) malignant (Table 1).

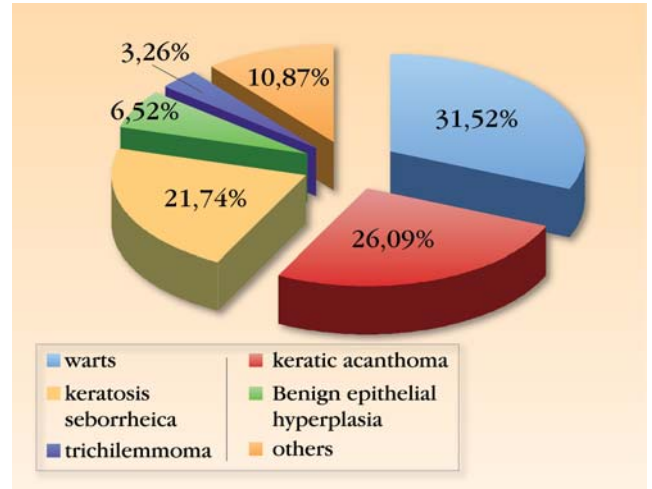
The average age of patients the moment the diagnosis was made was 67,42 years of age (standard deviation of ±18,36 varying from 14 to 95 years of age). There was no significant divergency between data obtained and a normal curve.

The age group with a higher prevalence of cutaneous horn was the one with patients varying from 50 to 89 years of age with predominance of premalignant histopathologic lesions on the basis (96; 84,21%); it was also observed a high frequency of benign lesions (76; 83,51%). There was no record of only case.(Graph 2).

144 lesions (64,68%) were detected in female patients and 78 lesions (35,14%) in male patients. The distribution of benign, premalignant and malignant lesions in relation to the female and male sexes was respectively: benign (60 and 27,03%; 32 and 14,41%), premalignant (72 and 32,43%; 42 and 18,92%) and malignant (12 and 5,41%, 4 and 1,80%) (Graph 3).

Premalignant lesions occurred predominantly on the head, upper limbs and stem while lower limbs presented more benign lesions of histopathologic base. 26 cases were not recorded: 13 benign lesions of histopathologic base, 11 premalignant and 2 malignant(Graph 4).

Cutaneous horns were more commonly found in female patients. 39,58% of these women presented them on the upper limbs and 31,44% on the head.



GRAPH 1: Distribution of the main benign dermatoses histopathologically diagnosed on the base of a cutaneous horn

There was no information about where these lesions were found in the control cards of 17 patients.

41% of the male patients developed lesions located on the head and 24,64% on the stem. There was no information about where these lesions were found in the control cards of 9 patients (Graph 5).

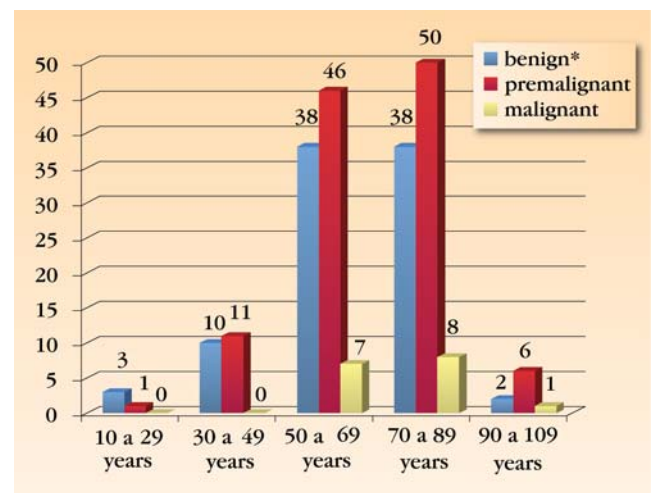
Concerning the color of skin, in 169 patients it was white (80,10%) and in 33 patients (15,64%) it was not white. In nine control cards (4,26%) there was no information about the color of skin of patients. From those 169 patients mentioned above, 94 of them (55,62%) had premalignant lesions of histopathologic base, 63 (37,28%) benign and 12 (7,10%) malignant.

Within the above mentioned group of 33 patients whose color of skin was classified as “not white”, 18 (54,55%) had premalignant lesions, 12

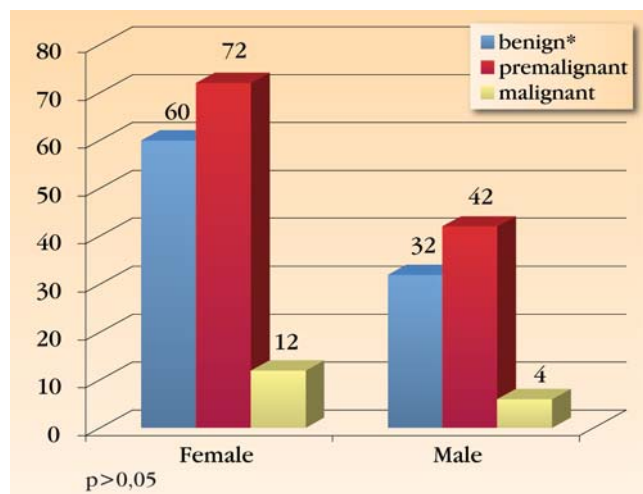
TABLE 1: Distribution of the main premalignant and malignant dermatoses histopathologically identified on the base of a cutaneous horn

Histopathologic diagnosis	N.	%
actinic keratosis	109	83,84
actinic keratosis CEC*	5	3,85
CEC**	15	11,54
CBC***	1	0,77
Total	130	100

n: absolute number of lesions
 * actinic keratosis progressing to squamous cell carcinoma
 ** squamous cell carcinoma
 *** basal cell carcinoma
 p>0,05



GRAPH 2: Distribution of benign, premalignant and malignant lesions according to the age group of patients



GRAPH 3: Distribution of benign, premalignant and malignant lesions according to the sex of patients

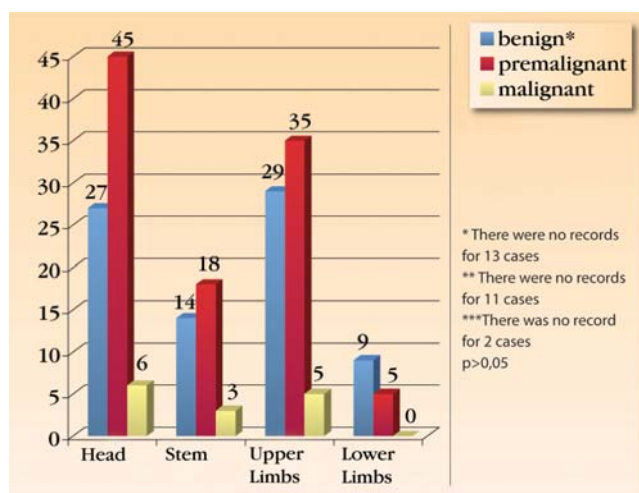
(36,36%) benign and 3 (9,09%) malignant (Table 2).

The length of time of the gradual development of the disease varied from one week to 240 months (average of 16,92 months ± 29,43 months).

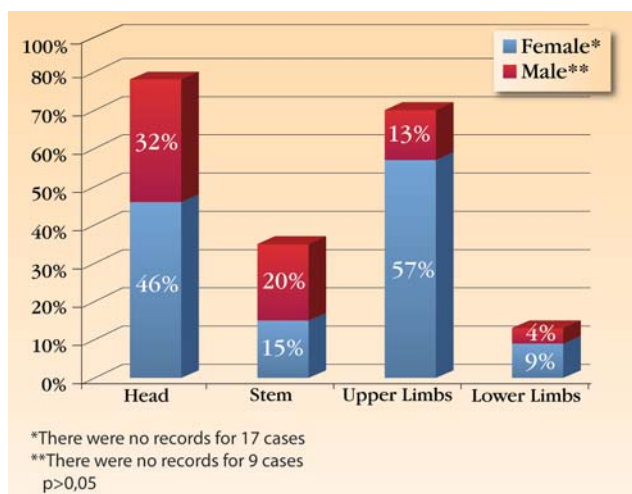
Out of the total number of patients (211), 199 had one only lesion and 12(5,69%) had multiple lesions.

Among the 211 patients with cutaneous horns, it was possible to measure the diameter of height in 196 patients and in 203 patients it was possible to measure the diameter of the base of the lesion. Height varied between 0,2 to 4 cm (median of 0,6, interquartile amplitude from 0,4 to 0,83 cm), and the diameter of the base varied between 0,1 and 4 cm (median of 0,5 cm, interquartile amplitude from 0,3 to 0,8 cm) (Tables 3 and 4).

The majority of the patients (179; 84,83%) did



GRAPH 4: Main parts of the body where cutaneous horns were located and their correlation



GRAPH 5: Relationship between the sex of patients and areas where cutaneous horn lesions were found

not present coexistence of other lesions. Besides cutaneous horns, it was found in the control cards the following diagnoses: basal cell carcinoma (CBC) (11 patients; 5,20%), hypertrophic actinic keratosis (9 patients; 4,26%), squamous cell carcinoma (CEC) (6 patients; 2,83%), actinic keratosis (4 patients; 1,92%), Bowen disease (1 patient; 0,48%), CEC and CBC (1 patient; 0,48%).

From all the control cards analyzed only in 27 of these cards there reports of symptoms the moment the clinical diagnosis of cutaneous horn was made. The most common symptoms reported were local pain (5; 18,51%) and itch (6; 22,22%).

DISCUSSION

Cutaneous horn is a clinical denomination which describes a highly keratotic, conical and circumscribed lesion, white or yellowish in color, that varies from a few milimetres to many centimetres and that can hide either benign or malign lesions. Therefore, what is really important is not the cuta-

TABLE 2: Distribution of the main benign, premalignant and malignant dermatoses concerning color of skin of patients

		Histopathologic Classification		
		Benign*	Premalignant	Malignant
Color	White	63	94	12
	Not White	12	18	3

* There were no records for 8 cases.

** There was no record for 1 case

p > 0,05

TABLE 3: Distribution of the main benign, premalignant and malignant dermatoses according to measure of height of the lesion

	Histopathologic classification		
	Benign*	Premalignant	Malignant**
Height $\leq 0,9\text{cm}$	44	73	9
Height $> 0,9\text{cm}$	31	35	4

* There were no records for 8 cases

** There were no records for 7 cases

p>0,05

neous horn itself but the subjacent disease. As a great number of cases of cutaneous horns corresponds to premalignant and malignant lesions it is justifiable the concern with its surgical excision for the histopathologic diagnosis of its base¹⁶.

Some studies appointed a probable association between the length of time of the gradual development of the disease and the diameter of the base of the lesion with the histopathological type. It was observed that the longer the time to develop the disease and the bigger its base, the higher the risk of the lesions being premalignant or malignant¹⁷. There are reports about a direct correlation between the size of the base of the lesion and its malignance¹, fact not confirmed by some authors¹⁷. In this research there was a larger number of premalignant lesions and larger base suggesting a possible correlation, which could be better assessed in later studies as in the clinical cards of the patients there is information about the measures of the base and height of cutaneous horn lesions.

The present casuistry appointed a larger number of cases with premalignant histopathologic characteristics (51,35%), followed by benign lesions (41,44%). It was found a smaller frequency of associations with malignant lesions (7,21%). These findings were similar to the findings of Castilho *et al*¹⁷ who, in a retrospective study of 77 cases, observed 46% of benign lesions, 41% of premalignant lesions and 13% of malignant. Yu *et al* found predominance of benign histopathological lesions (61%) in relation to the premalignant and malignant lesions (39%) in the cases of cutaneous horns studied. Festa and cols¹⁶, in a retrospective study of 514 cases of cutaneous horn, found 25,4% of lesions with histopathologic characteristics of benignity, 49,3% of premalignant lesions and 25,3% of malignant lesions.

The benign lesions more frequently found on the base of cutaneous horns in this research were viral

TABLE 4: Distribution of the main benign, premalignant and malignant dermatoses according to the measure of the base of the cutaneous horn lesion Histopathologic Classification

	Histopathologic classification		
	Benign*	Premalignant	Malignant**
Base $\leq 0,7\text{cm}$	53	75	9
Base $> 0,7\text{cm}$	25	36	5

* There were no records for 5 cases

** There were no records for 3 cases

p>0,05

wart; keratic acanthoma and keratosis seborrheica. Bart *et al*¹, among benign lesions, found keratosis seborrheica; benign epithelial hyperplasia and angioma; Yu *et al*¹⁵, benign epithelial hyperplasia, basal cell papiloma and vulgar wart, Festa and cols, wart; benign epithelial hyperplasia and keratosis seborrheica.

Lesions with malignant histopathologic base corresponded to 7,21 % of the total number of cases, and the squamous cell carcinoma was the most frequent lesion found (93,75%), fact which was in accordance with the dermatologic literature^{16,17}.

Although there was divergency in relation to the degree of malignity, various authors detected actinic keratosis as the main lesion on the base of cutaneous horn^{15-17,29,30} being the cutaneous horn classified by some authors as a especial type of hypertrophic actinic keratosis⁷. Actinic keratosis, also known as senile keratosis, results from the proliferation of atypical keratinocytes as a consequence of long exposition to ultraviolet radiation and it has been considered a premalignant lesion which may evolve to squamous cell carcinoma^{1,4,7,25}. However, Duncan and Leffell⁷ considered actinic keratosis already as squamous cell carcinoma in progress. Keratosis actinic was found in this study as the most frequent histopathologic base (39,64%) of the total number of cases, and among these, 4,39% already presented histopathologic alterations of transformation into squamous cell carcinoma. These numbers were similar to the numbers Schosser *et al*²⁹ and Festa and cols¹⁶ reported.

Cutaneous horn occurs mainly in individuals who are above 50 years of age, in both sexes^{1,15-17}, probably due to a major actinic and neoplastic degeneration occurring in elderly people¹⁶. Studies describe that the average age of patients with premalignant and malignant lesions is around 6 years more than that of patients with benign alterations and therefore the chances of finding a malignant substratum on the base of a cutaneous horn would increase proportionally

with the age^{15,17}. In this present research the age group which presented a higher prevalence of cutaneous horn corresponding to premalignant and malignant lesions was that of patients who varied from 50 to 89 years of age. In a similar way, Festa and cols¹⁶ showed this rising tendency as age increases probably due to more exposition of the skin to sun light. In the present casuistry, however, there were no significant differences as far as age is concerned in relation to malignancy of lesions.

Although some studies presented the male group as the group with a higher prevalence of cutaneous horn more recent studies present the female group as the one that was more taken by it. Contrasting with some series^{15,17}, it was found in this present study a higher frequency of cutaneous horn in the female sex, with a predominance of lesions with a premalignant histopathologic base. The predominance of cutaneous horns in the female sex might be due to the fact that women seek more medical treatment than men for esthetics reasons as it was also suggested by Festa and cols¹⁶. In the medical literature benign lesions are more frequent in women and, premalignant and malignant ones in men¹⁵⁻¹⁷.

In the cases analyzed cutaneous horns were more frequently located on the head (35,13%) and upper limbs (31,08%) in accordance with dermatologic literature¹⁵⁻¹⁷ being the majority of the lesions situated in areas of a higher actinic damage. Other series showed that the body areas where it is mostly common observed the occurrence of them are the upper regions of the face and next to the external ear⁴. Lesions on the stem and lower limbs were also observed but in smaller scale. Some studies showed that benign lesions^{16,17} are most frequently found in areas less exposed to the sun, like the lower limbs. On the other hand, areas more exposed to the sun such as nose, dorsum of the hands, scalp, forearm and arm

have twice more chances of presenting premalignant or malignant lesions on the base of the cutaneous horn if compared to any other part of the body¹⁵. According to Festa and cols¹⁶ the areas of the body most frequently affected, in decreasing order of importance were: malar, frontal, dorsum of the nose, neck, auricularis, lips and upper eyelid.

Cutaneous horn was defined by Bart *et al*¹ as a hyperkeratotic lesion in which height corresponds to at least half of the diameter of its base. However, in casuistry presented and confirmed by histopathologic examination as being cutaneous horn, this proportion only occurred in 23,98% of the lesions. It is important to point out that there is possibility of it being higher if its clinical progression had not been interrupted by surgical excision.

In this study it was found as most frequent histopathologic base the actinic keratosis and as most affected areas the head and upper limbs, areas more exposed to sun light. Therefore, it is essential to inform patients about photoprotection as preventive action bearing in mind that ultraviolet radiation is the principal physical factor which induces cutaneous carcinogenesis.

CONCLUSION

The majority of the cutaneous horns analyzed in this study appeared either on the head or on the upper limbs, areas which are more exposed to sun light. Daily use of photoprotectors could help to prevent the disease by minimizing the action of ultraviolet radiation that is widely known as an important factor in the genesis of cutaneous tumors. Considering the high frequency of premalignant and malignant lesions in this research, surgical excision followed by histopathological studies of the cutaneous horns is suggested to confirm the specific diagnosis of its base. □

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