**Original article**

# Histomorphological Profile of Vascular Tumors in Cameroon

*Aspects Histopathololologiques des Tumeurs Vasculaires au Cameroun*

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## ABSTRACT

***AIM***
To report histopathological aspects of the vascular tumors in Cameroon.
***METHODS***
We carried out a descriptive and retrospective study over a 5 year period, from 1st September 2004 to 31st August 2013. We included patients with vascular tumors ascertained by a histolological report.
***RESULTS***
550 patients were recruited with 349 (63.45 %) male and 201 (46.55 %) female. Patients were originated mainly from the Center region (30.18 %) and the Littoral region (23.82 %). The site of the lesion was mostly the skin (64.90 %). Among the lesions, 119(21.64 %) were benign, 393(71.5 %) intermediate (or locally aggressive) and 38 (6.91 %) were malignant. Among the benign lesions, capillary hemangioma (56.41 %) and cavernous hemangioma (23.08%) were the most frequent types. The intermediate lesions were dominated by Kaposi sarcoma (98.22 %), the retiform and Kaposiform hemangioendothelioma accounted for less than 2 %. Among the malignant group, angiosarcoma other than Kaposi sarcoma was the most frequent (55.26 %), followed by malignant hémangiopericytoma (23.68 %) followed by the epithelioid hemangioendothelioma (21.05 %).
***CONCLUSION***
Vascular tumors in Cameroon have a great variety of histomorphological aspects. Most are aggressive or malignant.
***KEY WORDS***
Histomorphology ; histopathology, vascular tumors, Cameroon.

## RÉSUMÉ

***OBJECTIFS***
Publier les aspects histopathololologiques des tumeurs vasculaires au Cameroun.
***MÉTHODES***
Nous avons mené une étude rétrospective et descriptive, sur une période de cinq ans allant du 1er Septembre 2004 au 31 Août 2009. Tous les sujets disposant d'un compte rendu d'anatomie pathologique concluant à une tumeur vasculaire ont été recrutés.
***RÉSULTATS***
550 patients ont été retenus dont 349 hommes (63,45%) et 201 femmes (46,55%). Les patients provenaient essentiellement des régions du Centre et du Littoral et constituaient respectivement 30.2 % et 23.8 % de l'effectif. Les localisations des tumeurs étaient en grande partie cutanées (64,90%). Parmi ces tumeurs 119 (21,64%) étaient bénignes, 393(71,5%) étaient intermédiaires (ou localement agressives) et 38(6,91%) étaient malignes. Parmi les tumeurs bénignes, les types histologiques les plus fréquents étaient l' hémangiome capillaire (56,41%) et l' hémangiome caverneux (23,08%). Les tumeurs intermédiaires étaient dominés par le sarcome de Kaposi (98,22%), l'hémangioendothéliome rétiforme et kaposiforme comptant pour moins de 2 %. Dans le groupe des tumeurs malignes, l'angiosarcome autre que le sarcome de Kaposi était le type le plus fréquent (55,26%) suivi de l'hémangiopéricytome malin (23,68%) et l' hémangioendothéliome épithélioïde (21,05%).
***CONCLUSION***
Les tumeurs vasculaires au Cameroun ont une grande variété histomorphologique avec une prédominance des formes agressives ou malignes.
***MOTS CLÉS :***
Histomorphologie ; histopathologie ; tumeurs vasculaires ; Cameroun.

## INTRODUCTION

Vascular tumors represent one of the largest groups of soft-tissue tumors [1]. In the United States of America, an epidemiologic analysis concerning the period of 1978 to 2001 found 4,1 % of the angiosarcomas among the vascular tumors [2].
In a Swedish study on vascular tumors diagnosed between 1958 to 2002, one thousand seven hundred and thirty (1730) patients were recruited. The most frequent of these tumors were Kaposi sarcoma, followed by hemangioblastoma, hemangioma and hémangiopericytoma with a proportion of 32.7%; 29.5% and 12.13% respectively [3]. In Africa, apart from the studies on Kaposi sarcoma, data are hardly available on vascular tumors. In South Africa, a national audit on malignant tumors of the liver in 274 children aged 1 to 14 years, from 1988 to 2006 found 13 % of vascular tumors, including hemangioendothelioma, angiosarcoma and Kaposi sarcoma [4].
The treatment depends on the benign or malignant behavior of the lesion, its topography, accessibility to surgery and their known response to other forms of treatment either radiotherapy, chemotherapy, anti-vascular drugs or laser treatment [5-10]. The clinical and histopathological profile of these tumors provide important data which constitute an important tool for decision-making as concerns the method of treatment.
In Cameroon, we found no data on the subject. The aim of this study was to provide data on morphological and histopathological characteristics of vascular tumors in Cameroon that could contribute to appropriate prevention and treatment of these

## MATERIAL AND METHODS

We conducted a multicentre descriptive, retrospective study over a period of five years, from 1st September 2004 to 31 August 2009. We collected data from the following institutions: Gynaeco-obstetrics and Pediatric Hospital (HGOPY), Yaounde General Hospital (HGY), Yaounde Central hospital (HCY), Yaounde University Teaching Hospital (CHU), Centre Pasteur du Cameroun (CPC), Douala Laquintinie Hospital (HLD), MEZAM Polyclinic (Bamenda), Laboratoire de l'APD (Bafoussam). All patients with pathological reports with diagnosis of a vascular tumor or its subtype were included in our study. The registers, the cards and the biopsy reports were consulted from these laboratories.
The age, sex of the patient, his/her region of origin, the anatomic site of the lesion, the histopathological type of the lesion were recorded. A second opinion from a senior pathologist was required for cases with imprecise or confused diagnosis. Patients who had local radiotherapy of the lesion prior to the diagnosis were excluded from the study because of possible adverse modification of the morphology of the lesion. The descriptive epidemiology of the tumor included the histopathological type using the World Health Organization classification [11]. For few specific cases, this classification was not applied; instead, we used that of Enzinger and Weiss [12].

TABLE I: DISTRIBUTION OF VARIOUS HISTOPATHOLOGICAL ENTITIES REGISTERED IN CAMEROON

| Histological type | Number | % |
|---|---|---|
| Angiosarcoma | 21 | 3,82 |
| Epithelioid hemangioendothelioma | 8 | 1,45 |
| Kaposiform Hemangioendothelioma | 3 | 0,55 |
| Retiform hemangioendothelioma | 4 | 0,73 |
| Capillary hemangioma | 66 | 12,00 |
| Cavernous hemangioma | 27 | 4,91 |
| Epithelioid hemangioma | 2 | 0,36 |
| Mixed hemangioma | 1 | 0,18 |
| Hémangiopericytoma | 20 | 3,64 |
| Lymphangioma | 12 | 2,18 |
| Kaposi sarcoma | 386 | 70,18 |
| **Total** | **550** | **100,00** |

## RESULTS

### *A. General features*

**Indexed grades anatomo-clinic and histologic types.**

A total of 550 vascular tumors were retrieved with 349 men and 201 women. Patients were aged 1 to 85 years with a median of 38 ± 14 years. The localizations were varied. 357 cases (64.90%) were skin localization, while 193 cases (39.10 %) were bone and visceral localizations. The locally aggressive tumors were predominant (71.45 %), followed by benign tumors (21.64 %) and malignant tumors (6.91%). Considering the histological type as shown in **Table I**, Kaposi sarcoma was the most frequent (70,18%), followed by the capillary hemangioma (12%) and cavernous hemangioma (4.91 %).

**Geographic distribution of vascular tumors**

Vascular tumors were recorded in the 10 regions of Cameroon. Nevertheless, lesions were mostly from the Center (30.18 %), the Littoral (23.82 %) and the West (13.64 %); The Far North represented (2.91%) **(Table II).**

### *A. Benign neoplasms*

As shown in Table III, capillary hemangioma was the most frequent benign neoplasm contributing 55.46% of this group of tumors.

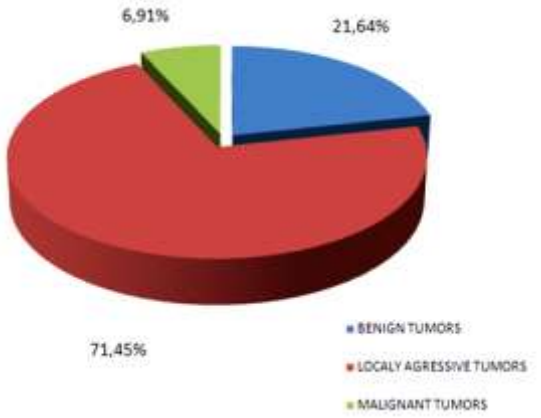


**FIGURE 1:** PROPROTIONS OF VASCULAR TUMORS ACCORDING TO THEIR CLINICAL GROUP IN CAMEROON.

### *B. Locally aggressive tumors*

Among 393 cases of locally aggressive tumors, 386 were Kaposi sarcomas. Only 3 kaposiform hemangioendothelioma (KHE) and 4 retiform hemangioendothelioma (RHE) were recorded (table IV).

**TABLE II:** DISTRIBUTION OF THE VASCULAR TUMORS BY REGIONS OF CAMEROON;

| Areas | Number | % |
|---|---|---|
| Adamaoua | 19 | 3,45 |
| Center | 166 | 30,18 |
| East | 23 | 4,18 |
| Far North | 16 | 2,91 |
| Littoral | 131 | 23,82 |
| North | 22 | 4,00 |
| North West | 44 | 8,00 |
| West | 75 | 13,64 |
| South | 27 | 4,91 |
| South West | 27 | 4,91 |
| Total | **550** | **100,00** |

### *C. Malignant neoplasms*

There were 38 malignant tumors (6.91%). The different types were: angiosarcoma (5.26%), malignant epithelioid hemangioendothelioma (21.05%) and malignant hémangiopericytoma (23.68%).

## DISCUSSION

Vascular neoplasms are currently classified as benign, intermediate or locally aggressive, or malignant [1,13,14,15]. During our study, the locally aggressive tumors constituted 71.45% of our sample, the malignant tumors accounted for 6.91%, and the benign tumors for about 20 %. In the literature, the benign variety is the most frequent with a high prevalence of hemangiomas [1,3,13,14,15]. In our context, the high proportion of intermediate vascular tumors is probably due to the high prevalence of HIV-related Kaposi sarcoma; the national sero-prevalence of HIV is 5.5% [8].

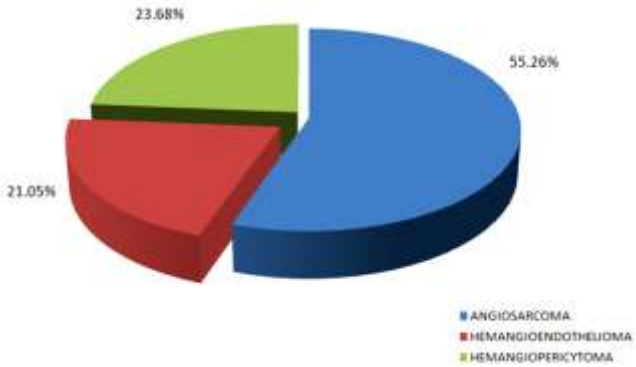


**FIGURE 2 :** PROPORTIONS OF THE SUBTYPES OF MALIGNANT VASCULAR TUMORS

The treatment of Kaposi sarcoma in Africa needs harmonization [5]. The retiform and kaposiform hemangioendothelioma (RHE and KHE) had the respective proportions of 1.02% and 0.76%. Although there are sporadic cases, the KHE was more common in children whereas the RHE concerned mainly young adults.

**TABLE III:** HISTOLOGICAL TYPES OF THE BENIGN VASCULAR TUMORS IN CAMEROUN.

| Histological type | Number of cases | Percentage (%) |
|---|---|---|
| **Capillary hemangioma** | 66 | 55,46 |
| **Cavernous hemangioma** | 27 | 22,68 |
| **Mixed hemangioma** | 1 | 0,85 |
| **Epithelioid hemangioma** | 2 | 1,69 |
| **Hemangiopericytoma** | 11 | 9,24 |
| **Lymphangioma** | 12 | 10,08 |
| **Total** | 119 | 100,00 |

Benign vascular neoplams were dominated by capillary hemangiomas. The other histological types included cavernous hemangiomas, mixed and epithelioid hemangiomas, lymphangiomas and benign hemangiopericytomas. Hemangiomas seem to be more frequent in infants and most of the time, the opinion of the pathologist is not sought in our environment.

Ji J and Hemminki K in 2007 in Sweden, in a retrospective study involving 1730 patients with vascular tumors, found a high prevalence rate of Kaposi sarcoma (32.7%) compared to hemangiomas (22.7%) [3]. This may be due to the fact that in some

of the areas most hemangiomas are diagnosed only clinically with few biopsies performed.

**TABLE IV:** FREQUENCY OF THE DIFFERENT LOCALLY AGGRESSIVE TUMORS.

| Histological type | Number (%) |
|---|---|
| Kaposiform hemangio-endothelioma | 3 (0.76) |
| Retiform hemangio-endothelioma | 4 (1.02) |
| Kaposi sarcoma | 386 (98.22) |
| Total | 393 (100.00° |

In Cameroun, vascular tumors were more frequent in the Center and the Littoral regions, with respectively 30.18% and 23.82% of the cases. This could be explained by the presence of well-trained professionals in these regions associated with the presence of several pathology laboratories that make the diagnosis. Although most populated region, Far North accounted for only 2.91% of the cases. People are encouraged to send biopsy specimens for histopathological analysis. On the contrary the Far North region, though larger, does not have any anatomo-pathology laboratory. It is likely that in such regions, vascular tumors are neither biopsied nor treated.

Malignant tumors were made up of angiosarcoma other than Kaposi sarcoma, the epithelioid hemangioendothelioma, and the malignant hémangiopericytoma.These tumors are rare [4, 15, 16]. Few cases of juvenile angiosarcoma have been previously reported in Cameroon with fatal outcome [17].

## CONCLUSION

There are various histomorphological types of vascular tumors in Cameroon. Most are Kaposi sarcomas and locally aggressive lesions. Our data may positively influence health policies of prevention and treatment of those diseases, as new treatment tools are made available in our health institutions.

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### CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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