ANGIOMATOID FIBROUS HISTIOCYTOMA IN CHILDREN - CLINICAL, HISTOPATHOLOGICAL AND SURGICAL ASPECTS

B. Bertrand[1], R. Vianna[1], F.N. Gutierrez[1], A. Moura Júnior1, S. Ferman[2], P. Faria[3], A. Ikeda[2], F. Rebelo[1], J. Lisboa[1], S. Nogueira[1], F. Ferreira da Silva Lima[2] ,S. Coelho[1]
[1]INCA, Pediatric oncology surgery, Rio de Janeiro, Brazil, [2]INCA, Pediatric oncology, Rio de Janeiro, Brazil.
[3]INCA, Pathology, Rio de Janeiro, Brazil.

INTRODUCTION

Angiomatoid fibrous histiocytoma (AFH) is a rare soft-tissue tumor with intermediate malignant potential that mostly affects children and young adults, accounting for aproximately only 0.3% of all soft tissue tumors. First described in 1979 as "angiomatoid malignant fibrous histiocytoma", it was renamed as AFH because of its infrequent malignant behavior with low rates of recurrence and metastasis and overall excellent clinical course.

The aim of the study was to describe clinical and histopathological findings of AFH, therapeutic approaches utilized and follow up.

METHODS

A retrospective study of 12 patients ≤18 years with AFH admitted at our institution between 1997 and 2016 was performed. Data collected from medical records were: age, sex, location of the tumor, clinical symptoms, findings on physical examination, imaging studies and histological diagnosis. One patient was excluded because the histopathological diagnosis, after an international expert review, was described as unclassified myxoid spindle cell sarcoma - high grade.

RESULTS

Eleven patients were analysed, 6 male and 5 female, with a median age of 13 years old (range: 7 to 17yo). All patients had more than one year history before diagnosis. The primary sites were located in lower extremities (n=5), shoulder girdle (n= 4) and trunk (n= 2). Tumor size ranged from 0.4 to 13.5 cm. Nine patients had localized disease and two, distant metastasis to the lungs at diagnosis. Lung metastasis was associated with larger tumors (more than 10 cm).

Systemic symptoms as fever, anemia and weight loss were present in 4 patients, 2 of those had lung metastases. One patient had nephrotic syndrome.

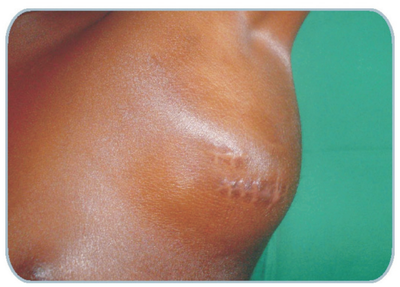

Figure 1: Patient 7: axillary region tumor

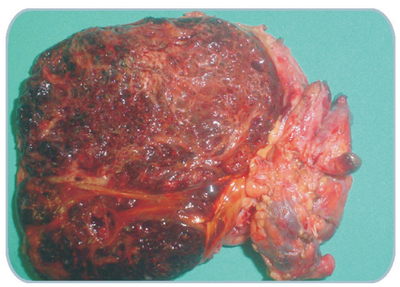

Figure 2: picture of the macroscopic tumor

All patients had primary tumor surgery: complete resection (n=3) and primary re-excision (n=8) due to unknown margins at first surgery. Other treatment modalities were: chemotherapy(n=1), radiotherapy(n=2), and chemotherapy and radiotherapy(n=1). Systemic symptoms disappeared after tumor resection in three patients (2 complete local resection and one local and lung metastasis resection).

The median follow up of 10 patients was 7 years (range: 2y -16y). One patient was lost to follow up after 2 months. Nine patients are alive without evidence of disease One patient with disseminated disease at diagnosis died after 10 years of initial treatment. One patient who received radiotherapy had a secondary primary tumor (dermatofibrossarcoma protuberans) after 5 years of follow up and is alive without evidence of disease for 16 years.

AFH usually involves the lower extremities and sites of normal lymphoid tissue as axilla, groin and supraclavicular region. Local symptoms such pain and tenderness are uncommon, but systemic symptoms are occasionally encountered and suggest the production of citokines. Complete surgical resection through wide local excision is the mainstay of treatment. Most AFH´s behave relatively indolently, death from distant metastases are very rare and may occur two decades after initial presentation.

Table1. Clinical, histopathological and surgical aspects of patiens with AFH

Patient	Age	Symptoms	Location	Size (cm)	Surgery	Metastasis	Chemotherapy	Radiotherapy	Histopathology	Immunohistochemistry	Follow up
1	14 y	-	Right Shoulder girdle	0.4	Primary re-excision	-	-	-	AFH	-	7 y
2	8 y	Fever, anemia and weight loss	Right lower limb (thigh)	5.0x6.0	Primary re-excision	-	-	-	AFH	-	2 m
3	17 y	-	Right shoulder girdle	2.5x1.5x1.0	Primary re-excision	-	-	Yes (1)	AFH	-	16 y
4	13 y	Fever and anemia	Left lower limb (thigh)	13.5x6.5x7	Complete resection	Lungs	Yes	Yes (2)	AFH(myxoid)	+: Desmin and CD99 mato	D (10 y)
5	15 y	-	Left lower limb (leg)	3.5x2.5	Primary re-excision	-	-	Yes (3)	AFH	+: Desmin	12 y
6	7 y	Fever	Left hemithorax	6.5x6.0x5.0	Complete resection	-	-	-	AFH	+:Desmin	9 y
7	9 y	Fever, anemia, weight loss and nefrotic syndrome	Left shoulder girdle (axillary region)	12x11x6.5	Primary re-excision + lung metastasectomy	Lungs	Yes	-	AFH (pleomorfhic)	+: Desmin	8 y
8	12 y	-	Left lower limb (knee)	3.4x1.7x1.2	Primary re-excision	-	-	-	AFH	+: S100	7 y
9	14 y	-	Right lower limb (thigh)	4.6x2.7	Primary re-excision	-	-	-	AFH	+: Desmin and SMA	5 y
10	11 y	-	Left shoulder girdle	1.5	Primary re-excision	-	-	-	AFH	+: vimentin, CD68, desmin and S100	4 y
11	17 y	-	Back	3.0x2.4x1.1	Primary re-excision	-	-	-	AFH (myxoide)	+: Ki67, desmin and vimentin / +: CD68. Ki 67 (10%)	2 y

D – Died
Y – Years / M – months
Chemotherapy: (Patient 4) Neoadjuvant and adjuvant chemotherapy: vincristine + doxorubicin + ifosfamide/ vincristine + cyclophosphamide + actinomycin/ oral etoposide; (Patient 7) Adjuvant chemotherapy: vincristine, cyclosphosphamide and dactinomycin alternated with vincristine, cyclosphosphamide and doxorubicin .
Radiotheraphy : (1) 6.600 cGy / (2) 456 cGy and 2000 cGy / (3) 6.000 cGy

CONCLUSION

AFH is a rare disease and often initially misdiagnosed. Correct diagnosis is fundamental to ensure that the patient receives proper treatment. Usually surgery is the only treatment needed. Local recurrence or metastases are rare, but can occur insidiously and long-term monitoring is recommended.

REFERENCES

1- Fletcher C D M; Bridge J A; Hogemdoorn P C W; et al. WHO Classification of Tumours of Soft Tissue and Bone. 4th ed. Lyon: IARC Press 2013; 2013.
2- Thway K; Cyril Fisher C. Angiomatoid Fibrous Histiocytoma-The Current Status of Pathology and Genetics. Pathol Lab Med (2015);139:674–682; doi: 10.5858/ arpa.2014-0234-RA
3- Fanburg-Smith JC, Miettinen M. Angiomatoid "malignant" fibrous histiocytoma: a clinicopathologic study of 158 cases and further exploration of the myoid phenotype. Hum Pathol. 1999;30:1336–1343.
4- Costa MJ, Weiss SW. Angiomatoid malignant fibrous histiocytoma. A follow-up study of 108 cases with evaluation of possible histologic predictors of outcome. Am J Surg Pathol.1990;14:1126–1132.
5 -Maher O M; Prieto V G; Stewart J; Herzog C E. Characterization of Metastatic Angiomatoid Fibrous Histiocytoma. Ped Hematol Oncol. Vol 37, Number 4, May 2015.

Projeto Gráfico: Serviço de Edição e Informação Técnico-Científica / INCA