Sub-cutaneous histiocytic sarcoma in a child: A case report

Sarcome histiocytaire sous cutané chez un enfant: A propos d'un cas

Mona Mlika[1], Rim Hamrouni[1], Abdelfatteh Zeddini[2], Emna Braham[1], Olfa Ismail[1], Faouzi El Mezni[1].

1-Department of Pathology. Abderrahman-Mami Hospital – Ariana. Tunis. Tunisia
2- Department of Pathology. Kef Hospital. Tunis. Tunisia
University of Medicine. Tunis. Tunisia

RÉSUMÉ

Prérequis : Le sarcoma histiocytaire est une hémopathie maligne rare caractérisée par une différenciation histiocytaire sur les plans morphologique et immunohistochimique. Ces tumeurs sont caractérisées par leur agressivité.

Observation: Nous décrivons le cas d'une fille de 14 ans, sans antécédent particulier qui a consulté pour une lesion nodulaire de la cuisse. La lesion a été biopsiée et l'examen anatomopathologique a conclu à un sarcome histiocytaire

Conclusion: Le sarcome histiocytaire est une tumeur rare de diagnostic difficile avec de nombreux diagnostics différentiels. Cette tumeur est difficile à prendre en charge vu la rareté des cas rapports dans la littérature et l'absence de réel consensus.

Mots-clés
Hémopathies malignes; sarcome histiocytaire.

SUMMARY

Background: Histiocytic sarcoma (HS) is a rare hematologic malignancy with morphologic and immunophenotypic evidence of histiocytic differentiation. This tumor follows an aggressive clinical course.

Case presentation: We report the case of a 14 year-old white girl who presented with a nodular lesion in the thigh, involving the skin and soft tissue. The histologic diagnosis retained was a HS.

Conclusion: HS is a rare neoplasm that may cause a diagnostic pitfall. Unfortunately, incomplete clinical data and histopathologic disparities in addition to the overall rarity of the neoplasms induced difficulties of management and of full appreciation of their clinical behavior.

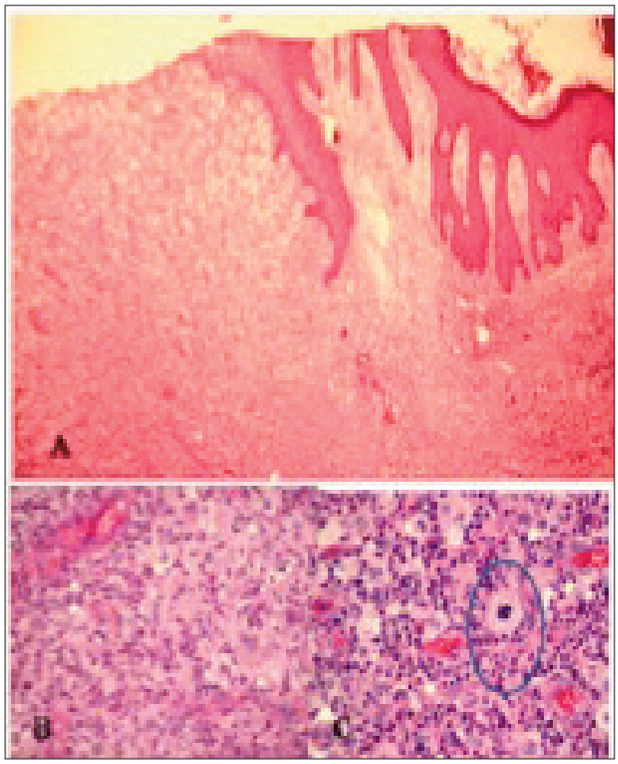
Key-words
Hematologic malignancies; Histiocytic sarcoma

Histiocytic and Dendritic cell sarcomas are among the rarest tumors affecting lymphoid tissues. These tumors arise from antigen-processing phagocytes (histiocytes) and antigen-presenting dendritic cells. The World Health Organization (WHO) classifies dendritic cell neoplasms into five groups: Histiocytic sarcoma, Langerhans'cell sarcoma, Interdigitating dendritic cell sarcoma/tumor, Follicular dendritic cell sarcoma/tumor and dendritic cell sarcoma not otherwise specified.

CASE PRESENTATION

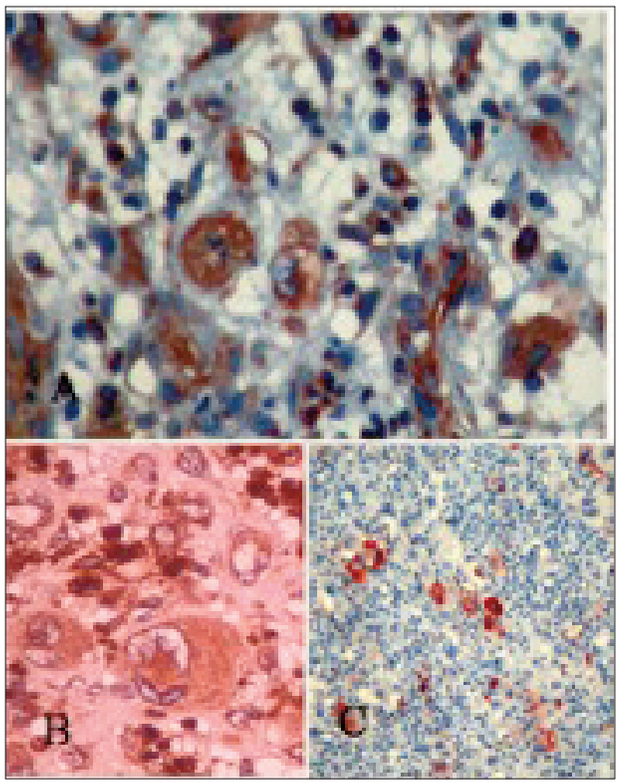
A 14-year-old white girl presented for an evaluation of an expansive mass in the outer side of the left thigh which has appeared since 2 months. It was growing rapidly. The physical examination was normal. Chest-x-ray and abdomino-pelvic ultrasonography failed to show any findings especially lymphadenopathy or hepatic and splenic enlargement. A surgical biopsy was performed showing grossly, a well circumscribed firm mass measuring 7x5x3 cm with gray-white cut surface, which was found infiltrating the overlying skin. Microscopic examination showed, in the subcutaneous tissue, many tumor cells aggregated in large sheets with an infiltrative growth (Figure 1a). They were large, round or epithelioïd with abundant pale eosinophilic cytoplasm, and excentric nuclei with vesicular chromatin and prominent nucleoli (Figure 1b). Multinucleated giant cells and mitotic figures were also seen (Figure 1c).

Figure 1 : a/ the tumor cells were aggregated in large sheets and they showed an infiltrative growth in the subcutaneous tissue (HE x 250), b/ tumor cells were large, round or epithelioïd with abundant pale eosinophilic cytoplasma, and pleomorphic,excentric nuclei with vesicular chromatin pattern and prominent nucleoli, c/ tumor cells with abnormal mitotic figures (HE x 400)



Occasionally, a few eosinophils and plasma cells, and small mature lymphocytes were observed throughout the neoplastic cells. Immunohistochemical study showed that the tumor cells were strongly positive with CD68, lysozyme and CLA antibodies (Figure 2a, b). They also expressed PS100 (Figure 2c). Cytokeratin, epithelial membrane antigen (EMA), HMB45, MELAN A, CD20, CD3, CD30, CD15, ALK1 and Myeloperoxidase antigens weren't expressed. On the basis of the microscopic and immunohistochemical findings, the diagnosis of histiocytic sarcoma was retained.

Figure 2: a/ diffuse cytoplasmic expression of CD68 antibody, b/ diffuse cytoplasmic expression of lysozyme antibody, c/ focal expression of PS100 by tumor cells



DISCUSSION

Histiocytic sarcoma (HS) is an extremely rare malignant tumor made of cells showing morphologic and immunophenotypic features similar to those of histiocytes [1]. Median age of the patients is 46 years with a male predominance [6]. About one-third of the cases present in lymph nodes, one-third in the skin, and about one third in a variety of other extra-nodal sites, most commonly the intestinal tract [1]. Localization in the soft tissue like in our patient has been rarely reported.

Before the development of immune-histochemical studies, many cases were misdiagnosed as HS and consisted in tumors of lymphoid origin [1]. In fact, before the development of immunohistochemistry, this diagnosis was more common. It is now recognized that most

cases of “Histiocytic sarcoma” described in the past represented diffuse/anaplastic large B-cell lymphoma, peripheral T-cell lymphoma associated with hemophagocytic syndrome, or lymphoma with associated reactive macrophage [5]. However, association with other hematological disorders including acute leukemia, lymphoma or myelodysplasia, has been observed in HS [3]. In fact, some clinical data have shown that two hematopoïetic populations in the same patient may share identical genetic changes or abnormalities raising the possibility that tumors expressing the phenotype of one hematopoietic lineage might “transdifferentiate” into a genetically similar but phenotypically distinct tumor of a different lineage[4].

The diagnosis of HS relies predominantly on the verification of histiocytic lineage and the exclusion of other poorly differentiated large malignancies (lymphoma, carcinoma, melanoma) by way of extensive immunophenotypic investigations [8]. Histologically, the tumor showed diffuse infiltrate of large, round to ovoïde pleomorphic cells with an abundant eosinophilic cytoplasm. The nuclei are eccentric and round/oval, with atypia varying from mild to severe. The nucleoli are small and distinct. Binucleated giant cells, mitosis and necrosis are common [6]. According to the literature, one case of histiocytic sarcoma showed unusual differentiation, namely a prominent spindle cell component, causing significant diagnostic confusion with other spindle cell neoplasms [6]. The neoplastic cells demonstrated immunohistochemical staining characteristics similar to those of normal monocytes/histiocytes namely strong immunoreactivity with CD163, CD68 (in 100% of cases), lysozyme (in 94% of cases), NSE and Vimentin [7]. The recent characterization of CD163 offered a mean of identifying histiocytic cells with a greater degree of specifcity and is a promising marker in the diagnosis of the true histiocytic malignancies [8]. Because of the monocytic origin of histiocytes, monoblastic leukemia should be especially excluded. The langerhans’cell, follicular dendritic cell, myeloid, B-cell, T-cell (CD4 is usually positive), epithelial cell, and melanocyte markers are negative. Focal reactivity for the S100 protein (typically expressed in Langerhans’cell tumors) can be present in normal macrophages and histiocytic sarcoma. This was the case in our observation. The ultrastructural features show numerous vacuoles and lysosomes. Interdigitating cell junctions and Birbeck granules are essentially absent. The latter features distinguish this entity from langerhans’ and dendritic cell tumors,especially when S100 protein is positive [2]. The biologic behavior of HS is typically aggressive with a poor response to therapy. Stage of disease and possibly tumor size are considered as significant prognostic indicators [1]. The treatment is based on surgical resection to obtain wide surgical margins. Chemotherapy regimens are more controversial. Radiotherapy has been shown to have an important adjunctive role in management of tumors with incomplete surgical resection [9].

CONCLUSION

HS is a rare neoplasm that may cause a diagnostic pitfall. These neoplasms may mimic other lymphoproliferative disorders in their clinical presentation and morphologic appearance. Unfortunately, incomplete clinical data and histopathologic disparities in addition to the overall rarity of the neoplasms induced difficulties of management and of full appreciation of their clinical behavior.

References

1. World Health Organization Classification of Tumours (2001) Pathology and genetics of tumours of haematopoietic and lymphoid tissue. International Agency for Research on Cancer (IARC), Lyon, pp 274–289.
2. Buonocore S, Valente A.L, Nightingale D, Bogart J, Souid A. Histiocytic sarcoma in 3-year-old Male: a case report. Pediatrics 2005; 116:322-325.
3. Copie-bergman C.C, Wotherspoon A.C, Norton A.J, et al. True histiocytic lymphoma: a morphologic ,immunohistochemical, and molecular genetic study of 13 cases, Am J Surg Pathol1998;22:1386-1392.
4. Feldman AL, Arber DA, Pittaluga S, et al. Clonally related follicular lymphomas and histiocytic/dendritic cell sarcomas: evidence for transdifferentiation of the follicular lymphoma clone. Blood. 2008; 111: 5433–5439.
5. Jaffe ES, Costa J, Fauci AS, Crossman J, Tsokos M. Malignant lymphoma and erythrophagocytosis simulating malignant histiocytosis. Am J Med. 1983;75:741-749.
6. Alexiev B A, Sailey C J, Mc Clure S A, Ord R A, Zhao XF, Papadimitriou J C. Primary histiocytic sarcoma arising in the head and neck with predominant spindle cell component. Diagnostic Pathology 2007,2:7.
7. Pileri SA, Grogan TM , Harris NL, et al. Tumours of histiocytes and accessory dendritic cells : an immunohistochemical approach to classification from the international Lymphoma Study Group based on 61 cases. Histopathology. 2002;41:1-29.
8. Vos JA, Abbondanzo SL, Barekman CL, Andriko JW, Miettinen M, Aguilera NS. Histiocytic sarcoma: a study of five cases including the histiocyte marker CD163. Modern Pathology 2005;18: 693–704.
9. Pellitteri PK, Ferlito A, Bradley PJ, Shaha AR, Rinaldo A. Management of sarcomas of the head and neck in adults. Oral Oncol 2003;39:2-12