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Diagnosis of Cutaneous Mastocytosis in an Adult Patient: A Case Report

Flávia Zattar Piazera*, Gabriel da S Lopes, Luiza A de Souza and David da S Nunes

Internal Medicine Department, University of Brasília, Brazil

***Corresponding author:** Flávia Zattar Piazera, University of Brasilia, Faculty of Medicine, Campus Darcy Ribeiro, Asa Norte, Brasília - DF, Brazil, 70910-900, Tel: +55(61)92235559; Fax: +55(61)34292900; E-mail: fpiazera@terra.com.br

Abstract

The cutaneous mastocytosis is characterized by infiltration and proliferation of mast cells in the skin with no evidence of extracutaneous involvement. The clinical findings most frequently found are brownish macules or papules slightly elevated, frequently localized in the limbs, chest and abdomen. Mutations in the c-kit receptor (CD117) are frequent and provide the pathophysiology basis of the disease. These mutations allow autophosphorylation of the c-kit receptor and subsequent degranulation of mast cell precipitated with a variety of stimuli, releasing local or systemic cell mediators capable of causing symptoms. Skin lesions occur in both the systemic and the cutaneous form of the disease, though the latter is more frequently seen in children, while most adults with mastocytosis present signs and symptoms of systemic involvement. Although this clinical pattern, we report a rare case of adult-onset cutaneous mastocytosis in a masculine patient of 32 years old. Clinical presentation featured hyperpigmented macules with brownish coloration diffused through the chest and limbs. Skin and bone marrow biopsies and laboratory testing were made and strengthened the diagnosis of cutaneous mastocytosis, a clinical presentation with little similar case reports.

Keywords: ***Cutaneous mastocytosis; Mast cells; Urticaria pigmentosa; Maculopapular Cutaneous mastocytosis***

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Abbreviation

WHO: World Health Organization; SM: Systemic Mastocytosis; CM: Cutaneous Mastocytosis; MPCM: Maculopapular Cutaneous Mastocytosis

Introduction

Mastocytosis is a heterogeneous group of rare diseases characterized by infiltration and proliferation of abnormal mast cells in different tissues, which may have an innocent clinical course, with spontaneous regression of the lesions, or may have a malign aspect, with infiltration of internal organs or medullary dysplasia. This excessive proliferation occurs mainly due to mutations on the receptor tyrosine kinase c-kit (CD117), which then transmits a molecular signaling cascade that induces growth and differentiation of mast cells independently of its ligand, enhancing the lifespan and amount of these cells in the organism [1,2]. Signs and symptoms of the disease usually arise due to excessive degranulation of mast cells, releasing chemical mediators in the bloodstream, such as heparin, histamine and prostaglandins, which can cause systemic symptoms, such as hypotension,

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anaphylaxis, asthenia, diarrhea and anorexia. Some complaints can also occur specifically due to organ infiltration like the liver, leading to portal hypertension.

The 2016 World Health Organization (WHO) classification system divides the disease in 2 categories: systemic mastocytosis (SM), with extracutaneous mast cell proliferation that may or may not feature skin involvement, and cutaneous mastocytosis (CM), with lesions limited to the skin. Furthermore, this new classification system establishes specific diagnostic criteria for SM (Table 1). The diagnosis of SM is made when 1 major criterion and 1 minor criterion or 3 minor criteria are fulfilled, according to the WHO [3]. There is only 1 major criterion, which consists of the presence of multifocal infiltrates of mast cells (≥15 mast cells in aggregates) in a biopsy section of the bone marrow and/or other extracutaneous organ. The 4 minor criterion are: more than 25% of mast cells in the infiltrate are spindle-shaped or atypical in morphology in a biopsy of bone marrow or other extracutaneous tissues or more than 25% of all mast cells in the bone marrow biopsy are immature; detection of a mutation at the codon 816 of the c-kit (CD117) coding gene in mast cells from the bone marrow, peripheral blood or other extracutaneous tissue; presence of mast cells in the bone marrow, peripheral blood or other extracutaneous tissue that express CD2 and/or CD25 along with the expression of CD117 and; persistent total serum tryptase >20 ng/mL, except in cases of associated clonal myeloid disorder [1]. Moreover, the diagnosis of CM requires, in conjunction with the presence of characteristics clinical findings and the absence of sins suggestive of systemic involvement, a skin biopsy confirming the presence of a multifocal or diffuse infiltrate of mast cells [4].

Major Criterion	Detection of multifocal infiltrates with ≥ 15 mast cells in aggregate in a biopsy of bone marrow and/or other extracutaneous organs.
Minor Criterion	1. More than 25% of mast cells visualized on a biopsy of bone marrow or other extracutaneous organ have atypical morphology or are spindle-shaped or more than 25% of mast cells in a bone marrow biopsy are immature.
	2. Detection of a mutation at codon 816 of the c-kit (CD117) coding gene in a biopsy of bone marrow, peripheral blood or other extracutaneous organ.
	3. Expression of CD2 and/or CD25 in mast cells from the bone marrow, peripheral blood or other extracutaneous organ along with the expression of normal mast cell markers (CD117).
	4. Persistent values of total serum tryptase > 20 ng/mL, except in cases of associated clonal myeloid disorder, in which this parameter is not valid.

Table 1: WHO diagnostic criteria for systemic mastocytosis (2016).

The CM can be subclassified in maculopapular cutaneous mastocytosis (MPCM), which can also be denominated urticaria pigmentosa, diffuse cutaneous mastocytosis and cutaneous mastocytoma. The MPCM, most common manifestation of CM, is characterized by the presence of reddish to brownish macules or papules with clear edges, found mainly on the chest and proximal portions of the limbs that can also be presenting as nodules in some cases. These lesions frequently have pruritus, erythema and edema after physical, thermal or chemical stimuli. The diffuse cutaneous mastocytosis is a rare condition and occurs due to a diffuse infiltration of mast cells in the skin, making it appear yellowish-red and thicker. The cutaneous mastocytoma is also rare, and it's characterized by a nodular lesion reddish to brownish in colour with 1 to 5 cm in size, usually solitary, but it can have up to 5 lesions [1].

The CM is a disease mostly diagnosed in children, with most part of the adults diagnosed with mastocytosis having the systemic form of the disease, which comprises more than 95% of the cases [4]. On account of that, adult-onset of skin lesions suspicious of mastocytosis are highly suggestive of systemic disease, indicating an additional investigation to discharge it or confirm it [5].

Case Report

A 32 years-old man, WDR, presented with hyperpigmented macules with brownish colour diffused through the chest and proximal extremities of the limbs (Figure 1 and Figure 2). The palmar and plantar regions were not affected during 2 years of clinical following. He denied previous history of frequent indisposition, anorexia or diarrhea. Sins of profound asthenia, severe malnutrition or hepatosplenomegaly were not found at physical examination. Laboratory tests were requested and revealed a usual hemogram with a normal complete blood count and normal hepatic function. Levels of histamine (6.6 µmol/L) and serum tryptase (18 ng/mL) were elevated.

A biopsy of the skin lesions was made, along with an immunohistochemical analysis that revealed a superficial dermis with moderate infiltrate, composed mainly by mast cells, which were positive for CD117 staining and negative for CD25, CD20 and CD3 (figure 3). Immunophenotyping by flow cytometry was also made with a bone marrow aspirate, which revealed abnormal mast cells that were positive for CD2 and CD25. This test also revealed that mast cells represented 0.05% of all cells in bone marrow, which was within the parameters of normality (<1%).

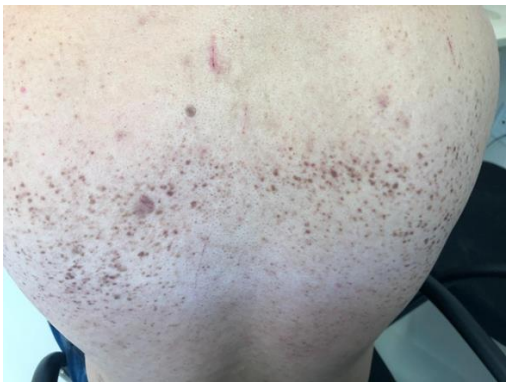

Figure 1: Hyperpigmented reddish to brownish macules diffuse through the back.

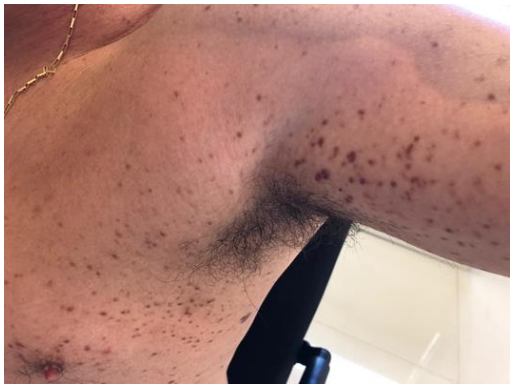

Figure 2: Hyperpigmented reddish to brownish macules diffuse through the anterior region of the chest and proximal portion of the limbs.

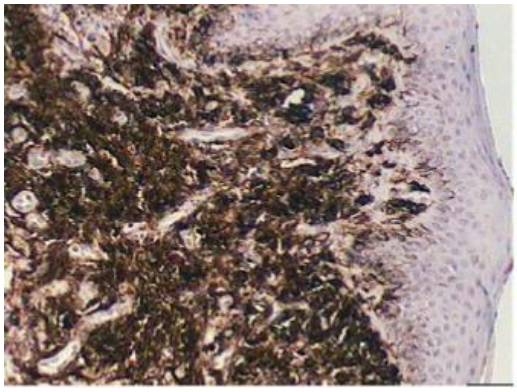

Figure 3: Immunohistochemical analysis of a skin lesion biopsy revealing superficial dermis with area of moderate infiltrate of mast cells that are positive for c-kit staining (CD117).

Results and Discussion

Only 1 minor criterion for the diagnosis of SM was fulfilled (expression of CD2 and/or CD25 in mast cells of the bone marrow, peripheral blood or extracutaneous tissue), since the presence of a mutation at the codon 816 of the gene that codifies the c-kit receptor wasn't verified. Even if an investigation was conducted and revealed the presence of a mutation in the gene c-kit, only 2 minor criteria would be fulfilled, excluding the diagnosis of SM.

In the light of the clinical presentation exposed, along with the laboratory and biopsy results, the diagnosis of MPCM was made, with no signs suggestive of extracutaneous involvement or leukaemia.

Conclusion

The mastocytosis is a rare clinical presentation in which can be observed infiltration and proliferation of mast cells in different tissues, being frequent the systemic involvement in the adult. Its cutaneous-exclusive manifestation, classified as CM, represents less than 5% of adult cases, being more frequent in children under 2-years-old [4]. The case report presented here is atypical and diverges from the usual clinical presentation because it's an adult patient with CM without signs of systemic disease.

Acknowledgement

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Conflict of Interest

The authors have no conflicts of interest to declare.

References

1. Maluf LC, Barros JAD, Machado Filho CD (2009) Mastocitose. Anais Brasileiros de Dermatologia 84(3): 213-225.
2. Theoharides TC, Valent P, Akin C (2015) Mast cells, mastocytosis, and related disorders. New England Journal of Medicine 373(2): 163-172.
3. Valent P, Akin C, Metcalfe DD (2017) Mastocytosis: 2016 updated WHO classification and novel emerging treatment concepts. Blood, The Journal of the American Society of Hematology 129(11): 1420-1427.

4. Castells MC and Akin C (2019) Mastocytosis (cutaneous and systemic): Epidemiology, pathogenesis, and clinical manifestations. Waltham, MA: UpToDate, Wolters Kluers.
5. Berezowska S, Flaig MJ, Ruëff F, et al. (2014) Adult-onset mastocytosis in the skin is highly suggestive of systemic mastocytosis. Modern pathology 27(1): 19-29.