1. Introduction

Mastocytosis is a neoplastic proliferation of mast cells that can present in the skin with or without systemic disease.1–3 It is a sub-classified according to microscopic and clinical features, including sites of involvement and clinical behavior.1–3 Clinical variants include cutaneous mastocytosis; indolent systemic mastocytosis; systemic mastocytosis with associated clonal hematological non-mast-cell lineage disease; aggressive systemic mastocytosis; mast cell leukemia; mast cell sarcoma; and extracutaneous mastocytoma.1–3

Mastocytosis may involve any tissue in the body. The bone marrow is almost always involved in systemic mastocytosis, and it is biopsied to fully establish the diagnosis.1,2 Systemic mastocytosis may also be found in the lymph nodes, spleen, liver, and gastrointestinal tract mucosa.2 Mast cell sarcoma is extremely rare and has occurred in the larynx, large intestine, meninges, bone, and skin.2 More than 50% of patients with systemic mastocytosis, and approximately 80% of patients with mastocytosis of any kind, have cutaneous lesions.2 Skin lesions in patients with systemic mastocytosis usually portend a more indolent clinical course.2

The diagnosis of cutaneous mastocytosis requires appropriate clinical findings, histological proof of an abnormal mast cell infiltrate in the dermis, and insufficient features to diagnose systemic mastocytosis such as elevated serum tryptase or organomegaly.2 There are three major variants of cutaneous mastocytosis: urticaria pigmentosa/maculopapular cutaneous mastocytosis, the most common variant; diffuse cutaneous mastocytosis; and solitary mastocytoma of skin.2,3

Cutaneous mastocytosis is described most often in children1–4 and only rarely in adults.5 Solitary mastocytoma of skin occurs almost exclusively in infants, with no predominant site.2,3,6 Interestingly, mast cell tumors are very common in the skin of cats,7 and they occur frequently in feline eyelids8 and the periocular region.9 In a study of eyelid tumors from 43 cats, there were 12 squamous cell carcinomas and 11 mast cell tumors.10 In contrast to the cat, mastocytomas are rare in the human eyelid with only four reported cases.4,10,11 The first case, reported in 1987, was a 10 mm in diameter solitary mastocytoma in the right lower eyelid of a 4-month-old boy that was present since birth.11 A second child presented with recurrent eyelid edema.12 Most recently, a 2-month-old boy presented with a 7 × 3 mm lesion that caused occasional swelling.13 Our review of the literature uncovered only one example of solitary mastocytoma in the eyelid of an adult: a 56-year-old man with prolidase deficiency.14 No cases of mastocytosis were reported in three large series of eyelid tumors.15–17 We report the fifth case of solitary mastocytoma in the human eyelid and only the second in an adult.

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Purpose: To describe the ophthalmic symptoms and histopathological findings in a rare case of an eyelid mastocytoma in an adult.

Observations: A man in his early 60s developed a painless, non-tender, non-pruritic, mobile nodule on the right lower eyelid beneath the inferior orbital rim. The lesion grew to 15 × 9 mm over eleven months. Biopsy revealed a diffuse infiltrate of histiocytoid and spindle-shaped mast cells forming cords and small nests between collagen fibers in the superficial and deep dermis. Mast cell lineage was confirmed by immunohistochemistry. Physical examination revealed no other cutaneous lesions and no evidence of systemic disease. Serum tryptase level was normal. Annual full-body examination by a dermatologist for 4.5 years has revealed neither recurrence in the eyelid nor cutaneous involvement at other sites.

Conclusions and importance: Mast cell tumors limited to the human eyelid are extremely uncommon with only four previously reported cases, including one in an adult. This case highlights the rare possibility of a solitary mastocytoma presenting in the eyelid of an adult.

Case report

Solitary mastocytoma in the eyelid of an adult

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ABSTRACT

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A man in his early 60s presented with a painless, non-tender, non-pruritic, mobile nodule on the right lower eyelid below the inferior orbital rim. The lesion grew to 15 × 9 mm over eleven months. There was no antecedent trauma (including insect bite), infection, or neoplasm at this location and no history of atopic dermatitis. Physical examination revealed no other cutaneous lesions and no evidence of systemic disease. Serum tryptase level was within normal limits (5.3 ng/mL; normal < 11.5 ng/mL), and a complete blood count with differential was remarkable only for mild anemia. Annual full-body examination revealed no other cutaneous lesions and no evidence of systemic disease. Serum tryptase level was within normal limits (5.3 ng/mL; normal < 11.5 ng/mL), and a complete blood count with differential was remarkable only for mild anemia. Annual full-body examination revealed no other cutaneous lesions and no evidence of systemic disease. Serum tryptase level was within normal limits (5.3 ng/mL; normal < 11.5 ng/mL), and a complete blood count with differential was remarkable only for mild anemia. Annual full-body examination revealed no other cutaneous lesions and no evidence of systemic disease. Serum tryptase level was within normal limits (5.3 ng/mL; normal < 11.5 ng/mL), and a complete blood count with differential was remarkable only for mild anemia. Annual full-body examination revealed no other cutaneous lesions and no evidence of systemic disease.

The prognosis for patients with mastocytosis varies widely with disease type. Patients with mast cell sarcoma and mast cell leukemia usually progress rapidly and die within months. In contrast, cutaneous mastocytosis in pediatric populations has an excellent prognosis, and lesions may regress spontaneously before or during puberty. Adult-onset cutaneous lesions have a good prognosis but generally do not regress, and they are often associated with indolent systemic mastocytosis. Systemic mastocytosis has a better prognosis when cutaneous lesions have a good prognosis but generally do not regress, and they are often associated with indolent systemic mastocytosis. Systemic mastocytosis has a better prognosis when cutaneous lesions have a good prognosis but generally do not regress, and they are often associated with indolent systemic mastocytosis.

There is no cure for systemic mastocytosis; patients with aggressive variants may undergo cytoreductive therapies. In our patient, the lack of recurrence after excision was expected given the good prognosis of isolated cutaneous mastocytosis.

3. Discussion

The dense dermal infiltrate of mast cells forming a clinically apparent nodule, the absence of an antecedent inciting stimulus, and the normal serum tryptase level established the diagnosis of cutaneous mastocytosis. There was insufficient clinical suspicion for systemic disease to warrant a bone marrow biopsy since the serum tryptase level was normal. Mast cell sarcoma was excluded because the mast cells showed neither severe cytological atypia nor a destructive growth pattern. Among the three major variants of cutaneous mastocytosis, this lesion is best classified as a solitary mastocytoma because it was singular with a diameter greater than 1 cm. Mastocytomas, also known as nodular cutaneous mastocytosis, typically have sheets of mast cells filling the papillary and reticular dermis and sometimes extending subcutaneously. Our patient exhibited an interstitial pattern with mast cells mostly forming cords between dermal collagen bundles. The interstitial pattern is usually seen in patients with urticaria pigmentosa/maculopapular cutaneous mastocytosis and has not been reported, to our knowledge, in a solitary mastocytoma. Thus, our patient with a solitary mastocytoma is peculiar both because of his age and the histological pattern of the mast cell infiltrate.

Immunohistochemistry may be a useful adjunct to confirm the diagnosis of mastocytosis, which requires ≥ 15 mast cells in aggregates or > 20 cells per high power (x40) field. Normal mast cells express CD117 and mast cell tryptase, as well as CD9, CD33, CD45, and CD68. They do not express the myelomonocytic antigens CD14, CD15, and CD16, as well as most T- and B-cell related antigens. Chymase is highly specific but not very sensitive for identifying atypical and immature mast cells. In the eyelid, immunostains may be particularly useful for distinguishing mastocytosis from primary signet-ring cell/histiocytoid carcinoma, which has a predilection for the eyelids. Neoplastic mast cells are immunophenotypically similar to normal mast cells but co-express CD2 or CD2 and CD25. Membrane expression of CD25 on cutaneous mast cells in adults may be predictive of systemic mastocytosis, but a consensus threshold for a positive result remains to be established. In one recent study, the percentage of cutaneous mast cells expressing CD25 ranged from 2% to 75% in adults with systemic mastocytosis with compact mast cell infiltrates. The two adults with isolated cutaneous mastocytosis in that study had no CD25+ mast cells in their biopsy. In our patient, the significance of the rare CD25+ mast cells (< 1%) is uncertain given that the serum tryptase level was normal and there have been no other signs or symptoms of systemic mastocytosis during 4.5 years of clinical follow-up.

The prognosis for patients with mastocytosis varies widely with disease type. Patients with mast cell sarcoma and mast cell leukemia usually progress rapidly and die within months. Adult-onset cutaneous lesions have a good prognosis but generally do not regress, and they are often associated with indolent systemic mastocytosis. Systemic mastocytosis has a better prognosis when cutaneous lesions are identified. There is no cure for systemic mastocytosis; patients with aggressive variants may undergo cytoreductive therapies. In our patient, the lack of recurrence after excision was expected given the good prognosis of isolated cutaneous mastocytosis.

4. Conclusion

Our patient, the fifth reported case of mastocytosis limited to the eyelid and only the second in an adult, serves as a reminder to include mast cell disease in the differential diagnosis of nodular eyelid lesions.
Patient consent

Consent to publish this case report was not obtained as the authors' only involvement with the patient was interpretation of the biopsy. This report does not contain sufficient personal information for identification of the patient.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Conflict of interest

None of the authors have any potential conflicts of interest with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.ajoc.2018.01.009.

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