Case report

URTICARIA PIGMENTOSA IN A CHILD (telangiectasia macularis eruptiva perstans)

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SUMMARY

We present a case of telangiectasia macularis eruptiva perstans (TMEP) that occurred in an asymptomatic, otherwise healthy 15 year-old boy. He presented with a diffuse, telangiectasic macules within a tan-brown background.

No systemic symptoms were mentioned. Pertinent laboratory examinations showed increased serum concentration of histamine and heparin and an augmented urinary excretion of histamine. Microscopic examination of alcohol-fixed biopsy specimen of skin showed an increased number of mast cells.

A brief discussion is provided, especially in view of the rarity of telangiectasia macularis eruptiva perstans in this age group.

KEY WORDS

Mastocytosis, telangiectasia macularis eruptiva perstans, mast cells, histamine

INTRODUCTION

Cutaneous mastocytosis is a disease of pediatric age (1,2,3). It presents with four main clinical patterns, including the customary urticaria pigmentosa (UP), solitary mastocytoma, diffuse erythrodermic mastocytosis and the rare talangiectasia macularis eruptiva perstans (TMEP) (4). Histologically, typical skin lesions feature diffuse perivascular accumulation of mast cells, likely related to hyperplastic activation secondary to specific, rather than humoral stimulation. In fact, experimental evidence has been provided that local injection of mast cell growth factor (MGF) causes a cutaneous picture similar to that seen in mastocytosis (5). Moreover, increased local concentration of MGF is not paralleled in mastocytosis by a corresponding increase of serum concentration of MGF (6).

Although the skin is the most frequently involved organ in mastocytosis (2) and cutaneous lesions allow promptly the correct diagnosis, systemic involvement has been occasionally reported in the adults, especially in extracutaneous sites such as the central nervous system, gastrointestinal tract, bones and hematopoietic tissues (3). In these conditions, the count of circulating mast cells is comparably greater than in the localized forms (7).

In adult patients several diagnostic investigations, including invasive ones, are advisable even in absence of general symptoms, given the possibility of an

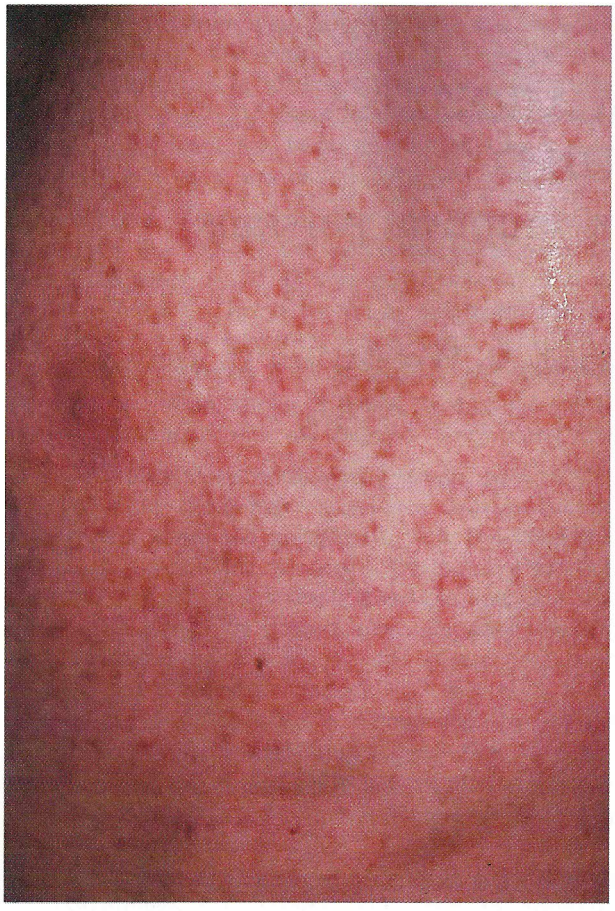

Fig 1. Teleangiectasia macularis eruptiva perstans (TMEP): clinical picture.

underlying systemic disease. On the other hand, TMEP in children may be better approached with non-invasive procedures unless there is a clinical

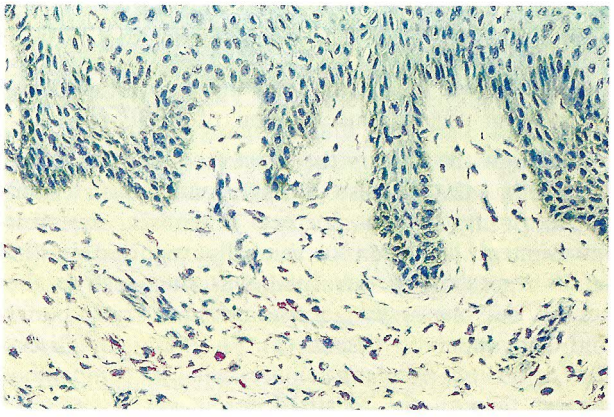

Fig 2. Teleangiectasia macularis eruptiva perstans (TMEP): spindle-shaped mast cells in the upper dermis and around vessel (toluidine blue x 64).

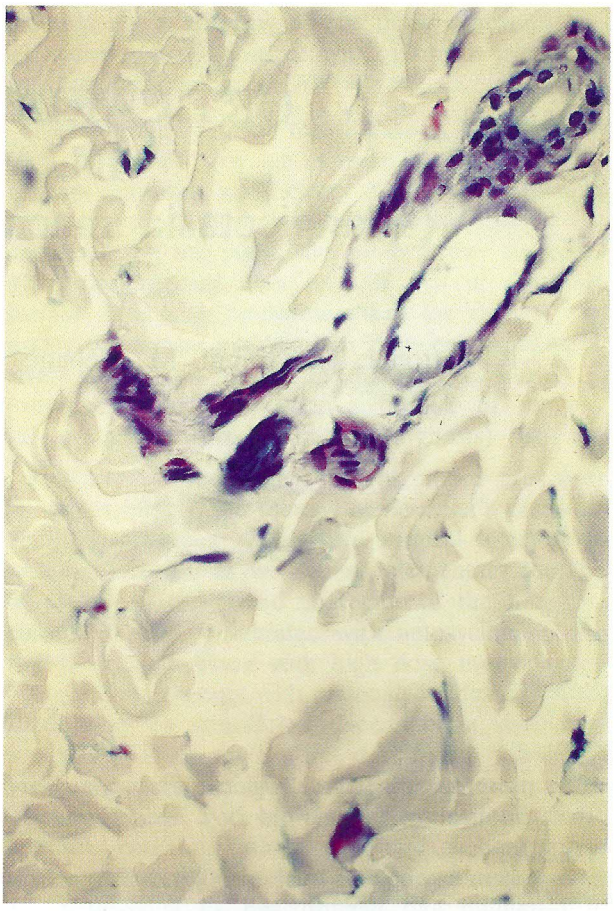

Fig. 3 Same as Fig. 2 at a higher magnification.

evidence or suspicion of a systemic disorder.

We report a case of TMEP seen in a 15-year-old boy and briefly discuss our findings, also analyzing the available literature on the subject.

CASE REPORT

A 15-year-old boy was admitted to our outpatient care center for asymptomatic telangiectatic confluent macules localized on the arms, trunk and face. (Fig 1). The lesions occurred within a tan-brown background and were referred to have been present for about 2 years. A centripetal spreading from the chest skin to the arms and the face had been noted. Past medical history was unremarkable, general symptoms were not referred. Physical examination was negative and a Darier's sign was evocable with difficulty. Routine laboratory examinations were within the normal range, e.g., blood coagulation tests, liver function tests, urine analysis and total serum proteins.

A punch biopsy of a skin lesion was done: histologic examination of hematoxylin-eosin stained sections obtained from 10% formalin fixed and routinely processed tissue gave non-diagnostic results. Following perilesional anesthesia a second skin biopsy was taken and placed in 95% ethanol. Histologic sections showed an increased number of mast cells in the papillary dermis and around superficial vessels. The basal cell layer of the epidermis contained an increased amount of melanin (Fig. 2 and 3).

An x-ray examination of the skeleton as well as ultrasound scans of the liver and spleen were within the normal limits.

Increased values of serum heparin (31 Usp/ml; normal 0) and histamine (16 micron mol/l; normal 0-10 micron mol/l) were detected. We tested serum tryptase (0; normal 0) and the 24-hour urinary excretion of histamine in repeated measurements (195 mcmol/mol creatinin; normal 80-170 mcmol/mol creatinin) and tromboxan (0.4 microng/l; normal 0).

In order to avoid mast cell degranulation we advised the patient not to use orally acetil-salicylic acid. Clinical follow-up was uneventful: skin lesions remained stationary. No systemic symptoms have been referred to by the patient.

DISCUSSION

TMEP (4,8-10) is a rare form of cutaneous mastocytosis that was originally described by Parkes in 1930 (8). The descriptive term is related to macroscopic erythematous appearance of the skin lesions caused by permanent vessel expansion secondary to local liberation of histamine and angiogenetic factors (9).

Usually this type of mastocytosis appears in middle-aged (11) obese women (2). A familiar transmission was reported (12). Sometimes atypical clinical pictures were described as erythrodermic evolution (13), poikilodermic (9), prevalently telangiectatic (8), diascopically brown hyperpigmented lesions (8). Facial and mammary (14) linear unilateral dermatomeric localizations were also observed. TMEP was described in association with classic UP (4).

In our patient TMEP had classic clinical presentation, localization and evolution without systemic characteristics. Peculiarity of this case is the age of the patient: TMEP has been rarely described in children (9).

The clinical picture was histologically confirmed. In the classic mastocytosis the mast cell infiltrate is abundantly present and easily recognizable (15,16), whereas it is less cellular, usually perivascular and more subtile in TMEP, especially if mast cells have undergone degranulation induced by anesthetics (2,17). In our case we used a non-epinephrine drug injected perilesionally to prevent local degranulation of mast cells: 95% ethanol acted as a better fixative than formalin (3). Finally, toluidine blue staining allowed prompt recognition of mast cells. More evident, metacromasia which is correlated with high level of pH, seems to be associated with benign forms of mastocytosis (18).

Systemic manifestations (19-21) and occasionally serious evolution (21,22) are reported in mastocytosis, probably reflecting high level of histamine and its metabolites (22). Systemic symptoms have been reported also in absence of skin lesions (22,23).

In addition, hepato-splenomegalia, intestinal hemorrhages, gastric ulcers, abdominal cramps, malabsorption (9,10), dyspnea, tachycardia, headache, depression (20), hematologic alteration (24,25), risk of pre-term labour, periodic loss of consciousness (22), flushing and diarrhoea (26) have been described in the course of systemic TMEP. Neuro-psychiatric and electrocardiographic alterations are frequently caused by direct effect of mediators (7,19). TMEP is rarely related to malignant and fatal hematologic alterations (19) and for this reason bone biopsy is seldom performed. Reports are available detailing increased number of cytologically normal or atypical mast cell (10) in the bone marrow. Monoclonal peak and anaplastic anemia (21) have been described in the course of mastocytosis.

Although several articles have been published dealing with questionable systemic involvement, TMEP is characterized in the majority of cases by skin lesions only and its prognosis is good. For this reason, non-invasive diagnostic procedures are advisable in such cases, especially in presence of classic clinical signs and laboratory data.

Radiographic examination of the skeleton was negative in our patient. It is important to stress that bone abnormalities have been reported in 57% of patients with cutaneous mastocytosis (3). Also 9% of adults and 15 % of pediatric patients (27) with asymptomatic mastocytosis have had pathologic bone manifestations. As far as organ-related symptoms are present or appear in the course of the disease, biopsy may be useful to assess mast cell infiltration.

Laboratory measurements of mast cell released substance provide diagnostic support in clinically

suspected cases of TMEP (28). In particular, high levels in serum and urine of histamine and other mediators, tromboxane and heparin helped establish the diagnosis of TMEP (1,29). Urinary increased and persistent excretion of N-methylhistamine, a histamine metabolite, though elevated in systemic TMEP, is non-specific since it has been reported in hypereosinophilic states. It is possible to measure methyl-imidazol-acetic acid and other mast cell enzymes. Systemic effects of increased level of heparin are limited. Serum tryptase determination by radioimmunoassay is technically difficult, but highly specific, since it is increased only in mastocytosis. Urinary metabolites of PGD2 by mass spectroscopy can be related to the level of histamine metabolites.

The therapy of cutaneous mastocytosis is conservative and symptomatic and it consists of systemically applied antihistaminics to reduce itching. Neurologic manifestation (22), carcinoid syndrome (26), dyspnea, headache, tachycardia and depression (20) can be alleviated with this therapy. However, such a treatment does not influence the evolution of the disease and several patients can become resistant to it (8). Substances and behaviour enhancing mast cell degranulation must be avoided to prevent flushing, headache or syncopes (13).

CONCLUSION

Considering the exclusive skin involvement and the absence of symptomatology, as reported in this case, no therapy is indicated. Periodic follow-ups are, however, recommendable. A study of further cases is needed in order to draw more definite conclusions concerning prognosis and treatment.

REFERENCES

1. Stein DH. Mastocytosis: a review. Pediatr Dermatol 1986; 3: 365-75.

2. Soter NA. The skin in mastocytosis. J Invest Dermatol 1991; 96 (suppl): 32-9.

3. Longly J, Duffy TP, Kohn S. The mast cell and mast cell disease. J Am Acad Dermatol 1995; 4: 545-61.

4. Parkes WF, Rast H. Telangiectasia macularis eruptiva perstans: a telangiectasic and relatively pigmented variety of urticaria pigmentosa of adults. Acta Derm Venereol (Stockh) 1935; 16: 216-24.

5. Galli SJ, Iemura A Garlich DS et al. Reversible expansion of primate mast cell populations in vivo by stem cell factor. J Clin Invest 1993; 91: 148-52.

6. Longley BY Jr, Morganroth GS, Tyrrel L et al. Altered Metabolism of mast cells growth factor (c-kit ligand) in cutaneous mastocytosis. N England J Med 1993; 328: 1302-7.

7. Horan RF, Austen KF. Systemic mastocytosis: retrospective review of a decade's clinical experience at the Brigham and Women's Hospital. J Invest Dermatol 1991; 96 (suppl): 5 - 14.

8. Parkes WF, Hellenschmied R. Telangiectasia macularis eruptiva perstans. Br J Dermatol Syph 1930; 42: 374-82.

9. Ball FI. Telangectasia macularis eruptiva perstans: a report of an early stage in a child. Arch Dermatol Syphilol 1937; 36: 65-9.

10. Allen BR. Telangectasia macularis perstans Br J Dermatol 1978; 99 (suppl 16): 28-9.

11. Sondergaard J, Asboe-Hansen G. Mastocytosis in childhood. In Haple R, Grosshans E (eds). Pediatric Dermatology. Springer-Verlag, Berlin, Heidelberg 1987: 148-54.

12. Clark DP, Buescher L, Havey A. Familiar urticaria pigmentosa. Arch Intern Med 1990; 150(8): 1742-4.

13. Requena L. Erythrodermic mastocytosis. Cutis 1992 1992; 49(3): 89-92.

14. Koeppel MC, Sayag J. Mastocytose lineaire a type de telangiectasia macularis eruptiva perstans. Ann Dermatol Venereol 1990; 117(2): 109-11.

15. Lever W, Schaumberg-Lever G. Congenital diseases (genodermatoses). Histopathology of the skin, 7th ed Philadelphia: Lippincott JB 1990: 65-95.

16. Ackerman AB. Histologic diagnosis of inflammatory diseases: a method by pattern analysis. Philadelphia: Lea and Febiger 1978.

17. Mihm MC, Clark WH, Reed RJ, Caruso MG. Mast cell infiltrates of the skin and the mastocytosis syndrome. Human Pathol 1973; 4: 231-9.

18. Lortholary O, Casassus PH, Laroche L, Lortholary

P, Diebold J. Mastocytoses systemiques et mastocytoses malignes. La Presse Medicale 1990; 19: 125-8.

19. Travis WD, Li CY, Bergstralh EJ et al. Systemic mast cell diseases: analysis of 58 cases and literature review. Medicine 1988; 67: 345-68.

20. Gasior-Chrzan B, Falk ES. Systemic mastocytosis treated with histamine H1 and H2 receptor antagonists. Dermatology 1992; 184 (2): 149-52.

21. Frances C, Boisnic S, Belaiche J, Cattan Godeau P. Mastocytose systemique maligne de l'adulte avec manifestations cutanees a type de telangectasia macularis eruptiva perstans. Ann Dermatol Venereol 1987; 114: 1379-81.

22. Bonnefoy M, Rouhouse B, Clavrel C, Decousus D, Claudy A. Pertes de connaissance prolongees revelatrices d'une mastocytosis a type de telangiectasia macularis eruptiva perstans. Ann Dermatol Venereol 1986; 113: 259-62.

23. Roberts LJ II, Fields JP, Oates JA. Mastocytosis without urticaria pigmentosa: a frequently unrecognized cause of recurrent syncope. Trans Assoc Am Physicians 1982; 95: 36-41.

24. Parker RI. Hematologic aspects of mastocytosis: bone marrow pathology in adult and pediatric systemic mast cell diseases. J Invest Dermatol 1991; 96 (suppl): 47-51.

25. Cooper AJ Winkelmann RK, Wiltsie JC. Hematologic malignancies occurring in patients with urticaria pigmentosa. J Am Acad Dermatol 1982; 7: 215-20.

26. Cohn MS, Mahon MJ. Telangiectasia macularis eruptiva perstans. J Am Osteopath Assoc 1994; 94(3): 246-8.

27. Lucaya J, Pere-Candela V, Also C at al. Mastocytosis with skeletal and gastrointestinal involvement in infancy: two case reports and a review of the literature. Radiology 1979; 131: 363-6.

28. Roberts LJ II, Oates JA. Biochemical diagnosis of systemic findings in systemic mastocytosis. Hum Pathol 1985; 16: 808-14.

29. Poynard T, Nataf C, Messing B et al. Secretory diarrhoea and prostaglandin D2 overproduction in systemic mastocytosis (letter). N Engl J Med 1982; 307: 186.

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