

## Case Report

### Febrile urticaria in a family: uncommon manifestation of a common disease

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#### Abstract

Cutaneous manifestations are uncommon with malaria. These include urticaria, purpura fulminans, and petechial rash. We report on a series of three patients from a single family who had an urticarial rash with fever that was subsequently diagnosed to be caused by malaria. Urticarial rash has been previously reported with both *falciparum* and *vivax* malaria infections. Although the exact pathogenesis is not clear urticarial rash might be related with IgE mediated mast cell degranulation.

**Key words:** malaria; rash; urticaria

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#### Introduction

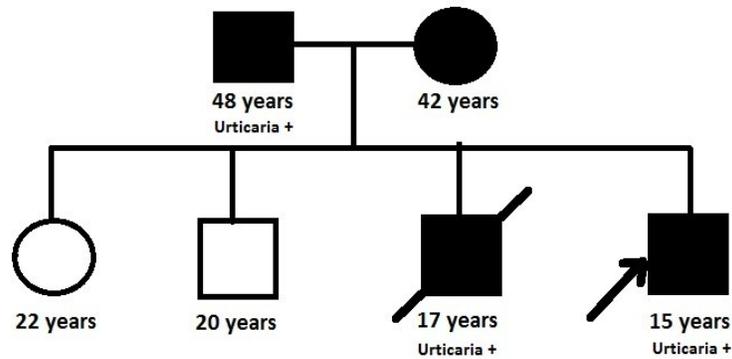
Cutaneous manifestations are unusual with malaria. These may include urticaria, purpura fulminans, and petechial rash. Urticarial rash has previously been reported with both *falciparum* and *vivax* malaria infections. Although the exact mechanism of causation is not clear, IgE mediated mast cell degranulation is believed to be responsible. We hereby report on a series of three patients from a single family who had an urticarial rash associated with malaria. We believe this might relate to an underlying genetic predisposition.

#### Case report

A 15 year-old boy from western Uttar Pradesh presented to the emergency department with a five-day history of high-grade fever associated with chills and rigors. The patient had developed a papular itchy rash all over his body three days after the onset of fever. The rash resolved within two days. On examination, the patient was conscious, irritable, with tachycardia (pulse-128/min) and tachypnea (38/min). He was pale, had mild icterus and palpable liver and spleen. Evaluation revealed hemoglobin of 6.3 g/dl; total leukocyte count of 9300/mm<sup>3</sup>; differential counts of neutrophils: 70 and lymphocytes: 30; and a platelet count of 193000/mm<sup>3</sup>. His renal functions revealed blood urea of 130 mg/dl, serum creatinine of 1.51 mg/dl, and liver functions were serum bilirubin 2.48 mg/dl, aspartate transaminase 71.19 U/L, alanine

transaminase 50.74 U/L, alkaline phosphatase 114 U/L, Total Protein 5.42 g/dl, Albumin 2.0 g/dl, Lactate Dehydrogenase: 1108 U/L. A malarial antigen test was positive for the *Plasmodium falciparum* (Advantage Mal Card, J. Mitra and Co Pvt Ltd, New Delhi, India). A peripheral blood smear revealed gametocytes of *Plasmodium falciparum*. Arterial blood gas analysis showed PaO<sub>2</sub> of 99.8 mm Hg at FiO<sub>2</sub> of 0.5. PaO<sub>2</sub>/FiO<sub>2</sub> was 199.6, suggestive of acute lung injury. Blood cultures and urine cultures were repeatedly sterile. Dengue serology, leptospira serology, Weil Felix reaction, and meningococcal antigen were all negative. The patient received intravenous artesunate (120 mg intravenous BD on day one and then once daily for five days) and oral doxycycline (100 mg BD for 7 days). Gradually renal and liver parameters improved, counts decreased, and tachycardia and tachypnoea resolved.

His elder brother (17 years old) died of malaria around 10 days before. He also had fever and a pruritic rash 10 days before death. On review of the records, he had anemia (Hb-6.0 gm/dL), thrombocytopenia (platelet count 40000), acute kidney injury (blood urea 164 mg/dl, serum creatinine 3.7 mg/dl), and encephalopathy. *Plasmodium falciparum* malaria was diagnosed based on a pLDH antigen test (Advantage Mal Card, J. Mitra and Co Pvt Ltd, New Delhi, India). His father also noticed a similar papular rash on his face and trunk associated with fever. The antigen test for the father was also positive for *Plasmodium*

**Figure 1.** Pedigree of family showing urticaria due to malaria

*falciparum* malaria and he improved with antimalarial treatment (combination of oral artesunate 50 mg BD for three days and pyrimethamine-sulfadoxime 75-1500 mg single dose). The patient's mother also had fever and tested positive for malaria; she was treated locally with anti-malarials and she improved.

### Discussion

Malaria is endemic in India. It usually presents as an acute febrile illness which may involve various organs including the central nervous system, kidney, liver, *etc.* Cutaneous involvement is uncommon and may manifest in the form of urticaria, angioedema, petechiae, purpura, and purpura fulminans [1]. Urticarial rash in association with malaria was recognised as early as 1945 [2]. Urticarial rash has been reported usually in association with *Plasmodium falciparum* and occasionally with *Plasmodium vivax* malaria [3]. The cutaneous lesions are believed to be a result of various immune reactions although the exact pathogenesis is not clear. Although some reports indicated eosinophilia related with this manifestation, none of our patients had eosinophilia [4,5]. Pathogenesis of acute urticaria is known to be related to IgE and mast cells. Inflammatory mediators released by mast cell degranulation result in variable manifestations which may include bronchospasm, shock, angioedema and urticarial rash. It is not clear if any genetic predisposition predisposes to the occurrence of such lesions. We report the present series because three of the family members we describe had urticarial lesions which occurred along with fever. Interestingly, the mother of the index case did not have these lesions although she also had malaria. Whether this is a mere coincidence or hints to a genetic predisposition is a matter of debate.

We conclude that malaria can on rare occasions have cutaneous manifestation including urticarial rash. The clinicians in endemic areas must not negate the diagnostic possibility of malaria in the presence of a cutaneous rash.

### References

1. Vaishnani JB (2011) Cutaneous findings in five cases of malaria. *Indian J Dermatol Venereol Leprol* 77: 110.
2. Mario S (1945) On three cases of idiosyncratic urticaria in course of relapsing malaria. *Ind Med Gaz* 80: 567.
3. Maheshwari N, Maheshwari V, Mobashir M (1989) *Plasmodium vivax* malaria presenting with urticaria. *Postgrad Med J* 65: 266-267.
4. Toovey S, Jamieson A, Nettleton G, Hatz C (2004) *Falciparum* malaria presenting with pruritic rashes. *Travel Med Infect Dis* 2: 189-191.
5. Davis MET, Ho M, Supanaranond R, Looareesuwan S, Pukkrittayakamee S, White NJ (1991) Changes in the peripheral blood eosinophil count in falciparum malaria. *Acta Tropica* 48: 243-245.

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