Malaria - the Master Masquerader

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Introduction

Malaria, is the second largest killer of humanity after tuberculosis in tropical countries. Despite its common occurrence, it can sometimes fool the most astute of physicians. This is especially true of plasmodium falciparum infections, which if unrecognised may have a fulminant course with disastrous consequences.

Acute urticaria is a dermal reaction pattern represented characteristically by itchy wheals and is often associated with oedema of subcutaneous tissue called angioedema. Malaria very rarely has cutaneous manifestations except the 'ominous' purpura fulminans seen in severe plasmodium falciparum infections [1]. We report an unusual case of vivax malaria presenting with acute urticaria and angioedema.

Case report

A 21 year old serving soldier was admitted with multiple itchy wheals over body, swelling of lips and periorbital skin of one week duration. He developed episodes of pain abdomen followed by vomiting, dizziness, breathlessness. There was no history of fever, loose stools, wheeze, arthralgia, insect bite, consumption of incriminating food or drugs prior to onset of symptoms. On examination the patient had fever (temperature - 101.8°F), tachycardia (pulse - 108 per minute, regular) and postural hypotension (supine and sitting blood pressure of 118/80 and 88/56 mm Hg respectively). There was no pallor, icterus, cyanosis or lymphadenopathy. Systemic examination did not reveal any abnormality. Dermatological examination showed multiple geographic wheals on trunk, face and extremities. There was perioral and periorbital angioedema. Dermographism and Darier's sign were negative.

On investigation patient had haemoglobin of 11.2 g/dl, total leucocyte count of 8,600/ mm³, differential leucocyte count of polymorphs 70%, lymphocytes 24%, monocytes 1%, eosinophils 5% and erythrocyte sedimentation rate of 20 mm fall at the end of 1st hour. All other investigations including

liver and renal function tests, stool routine examination, blood electrolyte levels, radiograph of chest and enzyme-linked immunosorbent assay (ELISA) for human immunodeficiency virus (HIV) were negative.

He was initially treated as a case of acute urticaria and angioedema with injectable and oral corticosteroids, inj ranitidine, antipyretics and oral antihistaminics with no relief of symptoms. Review of his clinical chart showed an alternate day pattern of rise of fever with the simultaneous appearance of urticarial wheals and angioedema and this raised the suspicion of malaria. A peripheral blood smear was done which was positive for ring forms of plasmodium vivax. Oral chloroquine was started and the patient showed a dramatic improvement in his condition with both fever and the urticarial rash subsiding within three days of starting the antimalarial treatment. Later radical therapy with primaquine was given. The patient was discharged after he had been symptom free for a week. An epidemiological investigation of the case was conducted by Officer Commanding, Station Health Organisation which included mass blood survey around the index case (75 slides), however no other case was found. Preventive focal pyrethrum and malathion spraying of accommodation was nevertheless carried out.

Discussion

Malaria is a febrile illness caused by protozoa of plasmodium species which is transmitted by bite of infected anopheles mosquito. It affects more than 1 billion people in 103 countries around the globe and accounts for 1-3 million deaths yearly [2].

The pathogenesis of acute urticaria is antigen induced, IgE mediated or direct mast cell degranulation. Degranulation of mast cells releases a constellation of mediators that are responsible for the various symptoms [3]. Acute urticaria though distressing is not life threatening unless accompanied with angioedema. Bronchospasm, abdominal pain, postural hypotension and syncope indicate massive mast cell degranulation.

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A variety of infections including viral (Hepatitis B, Epstein Barr Virus etc.), bacterial (Streptococci, Helicobacter etc.), fungal and protozoal have been implicated as triggers of acute urticaria [4]. Classically malaria, is not associated with skin rash, petechial haemorrhages in skin and mucous membrane but they occur rarely in falciparum malaria. A few case reports, from India cite instances of Plasmodium vivax malaria presenting with acute urticaria [5,6].

The pathogenesis of acute urticaria in patients suffering from vivax malaria remains speculative. Plasmodial sporozoites inoculated while taking a blood meal, multiply in the liver producing daughter merozoites, which after release into the bloodstream, attach themselves to specific receptors on erythrocytes. This attachment is known to make the erythrocytes antigenic by altering red cell membrane, exposing the hitherto hidden surface antigen and inserting new parasite derived proteins [7].

The increased antigenicity of RBCs caused by plasmodial infection [7], or plasmodial antigens per se may be responsible for the massive mast cell

degranulation in the present case. Whether this was mediated by immunological or direct mechanisms is unknown.

Conflicts of Interest

None identified

References

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Book Review

National Health Programmes of India by J Kishore. 5th Edition. Published by Century Publication, New Delhi, 2005. 476 pages, Rs 400 (INR), ISBN: 81-88132-13-6.

This book provides information on various national health programmes, national policies and legislations related to health in India. This edition is thoroughly updated and many new chapters of public health importance such as reproductive and child health programme-II, National Rural Health Mission, Integrated Disease Surveillance Project, and Millennium Development Goals are also included. These new chapters will be beneficial to teachers and students. This is the unique book, which is not only useful for the postgraduate but also the undergraduate medical, nursing, and social

science students. The quality and contents of the material presented in the book is quite optimal. In this edition the author has included summary at the end of topic, which is very beneficial for quick reviews. Author has touched the millennium development goals as a short topic and it is felt that the next edition should deal with the topic as a separate chapter. This edition is an attempt to enrich the different public health experts, policy makers, project officers and social workers with new events and happening in the field of health programmes and policies of India.

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Text book of Principles and Practice of Infectious Diseases by GL Mandell, JE Bennett. 6th Edition. Published by Elsevier Churchill Livingstone, Philadelphia, Pennsylvania, 2005. Paper back 1726 pages, Rs. 11000 (INR), ISBN:0443-06643-4.

Knowledge about infectious diseases has undergone an extraordinary expansion during the years between publication of the last edition of this book, and the present. The threat of previously unrecognised infections has emerged, and an awareness of the role of microbes as potential agents of terrorism heightened. The population of patients whose host defences are compromised by underlying diseases or by medical treatment continues to increase

and this has resulted in complex and challenging infections. This edition has attempted to capture this explosion of knowledge in an authoritative, complete, yet readable and readily accessible text. Every chapter has been revised, and many have been added. New chapters on SARS, Nipah and Hendra viruses, uncommon fungi, bioterrorism agents, and hospital preparedness for emerging and highly contagious infections are included. New colour figures and revised tables have been added, which makes it comprehensive.

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