CASE REPORT

MYELOID LEUKEMOID REACTION IN MALARIA INFECTION

Soe Soe, Tin Shwe and Than Swe

Department of Medical Research, No. 5 Ziwaka Road, Yangon, Myanmar.

Malaria has been associated with a variety of hematological abnormalities. These include neutropenia (Dale and Wolf 1973), thrombocytopenia (Hill *et al*, 1964), anemia (Neva *et al*, 1970), and disseminated intravascular hemolysis (Nibha *et al*, 1975). However, association with leukemoid reaction has not been described. The term "leukemoid reaction" refers to the condition in which there is a leukocytosis which resembles a leukemia but true leukemia is not present and does not develop (Twomey *et al*, 1965). The commonest leukemoid reaction is myelocytic; lymphocytic leukemoid reactions are less common and rarest of all is the monocytic reaction. A myeloid leukemoid blood picture may be defined arbitrarily as one in which the total white count exceeds $50 \times 10^9/l$, or myelocytes and/or myeloblasts appear in the peripheral blood (de Gruchy, 1978).

The aim of this paper is to describe the association of malaria and myeloid leukemoid reaction.

Case 1

This sixteen-year-old Myanmar girl was hospitalized because of high fever of one week duration. Physical examination revealed her to be febrile (41°C) without other significant signs. Her spleen was not palpable. She received intravenous quinine therapy because of a high parasite count of *Plasmodium falciparum*. At that time her white cell count was $80 \times 10^9/l$ with a few metamyelocytes. Two days after treatment, she became afebrile. Her blood film showed disappearance of malaria parasites and metamyelocytes with the total count falling to $9 \times 10^9/l$. She was discharged one week later without any recrudescence of malaria or myeloid leukemoid reaction.

Case 2

A twelve-year-old Myanmar girl was admitted with fever of two weeks duration and loose motions of 3 days duration. Her body temperature was 40°C, she was dehydrated and anemic. Liver and spleen were not palpable. Her blood film showed *P. falciparum* with total white cell count of $55 \times 10^9/l$ with occasional myelocytes. She was given injection artemether (an antimalarial drug) and transfused with two units of whole blood. She responded well and her blood examination repeated on the third day exhibited clearance of malaria parasites and myelocytes with the total white cell count reduced to $10 \times 10^9/l$. She was well throughout and was discharged.

In this report, both patients fulfill the criteria of myeloid leukemoid reactions. The causes of myeloid leukemoid reactions are many; one of them is association with infections. Myeloid leukemoid reactions in tuberculosis, especially miliary tuberculosis, is a well known phenomenon (Twomey *et al*, 1965). But to our knowledge association with malaria has not been reported. Since *P. falciparum* causes severe infections, myeloid leukemoid reaction is expected but out of more than 1,500 patients admitted to our malaria research unit, only these two have shown myeloid leukemoid reactions. Recently Khan (1991) mentioned the leukemoid reaction as one of the abnormal presentations of severe malaria infection. Leukemoid reactions due to infections are more commonly seen in children than adults. In this report the ages of the patients were 12 and 16 years. We thus record that myeloid leukemoid reaction can be associated with *P. falciparum* infection, although the phenomenon is not very common.

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