Marrow and blood smear review still saves lives

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CASE REPORT

A 62-year-old woman arriving to Miami, Florida, USA, on a commercial flight from Italy was found unresponsive upon landing. Her husband, seated next to her, arrived deceased. The female patient was brought urgently to our hospital. Physical examination showed ecchymosis and edema of limbs. Laboratory tests revealed thrombocytopenia of 88 K/uL, white blood count of 11.9 K/uL, hemoglobin of 6.9 g/dL, mean corpuscular volume of 82 fL, hypotension, acute renal failure, and fever (101.4 °F). Bone marrow biopsy was performed urgently and aspirate smears were stained and reviewed immediately upon admission of the patient. Examination of marrow aspirate smears revealed abundant hemozoin pigment and frequent hemophagocytosis (Figure 1A, B, 100x magnification). Florid infection of red blood cells by malaria trophozoites was seen in both peripheral smears and marrow aspirate smears, with trophozoites having morphologic features consistent with Plasmodium falciparum (Figure 2, 100x magnification). A diagnosis of florid infection by P. falciparum with extensive hemophagocytosis was made. The patient was treated promptly for cerebral malaria and survived. It was later discovered that she and her husband had traveled to the Ivory Coast to visit family and had felt ill for two weeks.

DISCUSSION

Malaria is a potentially life-threatening parasitic infection of the genus Plasmodium. Of more than 150 known species, four infect humans: P. falciparum, Plasmodium vivax, Plasmodium ovale, and Plasmodium malariae. The life cycle occurs in two hosts, the vector Anopheles mosquito and a vertebrate host.
of development are: sporozoite (transmitted form), merozoite (infests red cells), trophozoite (ring forms, multiply in red cells), and gametocyte (sexual stage). Trophozoites of *P. falciparum* are ring forms with a double chromatin dot that, during infectious states, show frequent multiple ring forms per infected red cell. Infections caused by *P. falciparum* are potentially fatal. Complications include renal failure, acute respiratory distress syndrome, and cerebral malaria [1].

**CONCLUSION**

Timely bone marrow aspirate smear review is still an important diagnostic tool in hematopathology and acting quickly to identify potentially fatal diagnoses such as *P. falciparum* infection can save lives.

**Keywords:** Hemophagocytosis, Parasitic infection, *Plasmodium falciparum*

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**Author Contributions**

Taban Ghaffaripour – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published.

Jennifer Chapman – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published.

**Guarantor of Submission**

The corresponding author is the guarantor of submission.

**Source of Support**

None.

**Consent Statement**

Written informed consent was obtained from the patient for publication of this article.

**Conflict of Interest**

Authors declare no conflict of interest.

**Data Availability**

All relevant data are within the paper and its Supporting Information files.

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