

CASE REPORT

A CASE OF MALARIA TRANSMITTED IN BULGARIA FROM ABROAD

Milena Karcheva¹, Maria Atanasova², Iskra Rainova³

¹ Department of Epidemiology, Parasitology and Tropical Medicine, Medical University-Pleven, Bulgaria

² Clinic of anesthesiology and intensive care, University Hospital "Sv. Anna"-Sofia, Bulgaria

³ National Reference Laboratory for Diagnosis of Parasitic Disease – NCPID – Sofia, Bulgaria

ABSTRACT

Introduction. In 1965 Bulgaria was recognized by World Health Organization as a malaria-eradicated country. However, isolated cases of malaria imported from endemic countries are diagnosed each year. We will present the case of a patient with cerebral malaria, who travelled in Africa.

Case report. A 36-year old woman was admitted to the hospital with flu-like symptoms. The epidemiological history of the patient revealed she stayed in Ivory Coast without undertaking chemoprophylaxis, prior to her departure to the African country. The disease started as a flu and coincided with the rise of viral diseases in Bulgaria. Laboratory examinations of nasal smear by polymerase chain reaction (PCR) did not confirm the initial suspicion. The patient's condition deteriorated and additional studies have shown cerebral malaria, caused by *Plasmodium falciparum*. Despite the complex treatment, the outcome was fatal.

Conclusion. Certain epidemiological and clinical risks generate import of malaria in Europe from endemic countries. The case of cerebral malaria described is the most frequent and severe complication of malaria falciparum. Chemoprophylaxis prior to departure for endemic regions, as well as monitoring of persons returned from those areas, are important for timely

RÉSUMÉ

Un cas de malaria transmis en Bulgarie de l'étranger

Introduction. En 1965 la Bulgarie a été reconnue par l'Organisation Mondiale de la Santé comme un pays qui avait éradiqué la malaria. Cependant, des cas isolés de malaria importés des pays endémiques sont diagnostiqués chaque année. Nous allons présenter le cas d'un patient avec malaria cérébrale qui avait voyagé en Afrique.

Rapport de cas. Une femme âgée de 36 ans a été admise à l'Hôpital présentant des symptômes simulant la grippe. L'histoire épidémiologique de la patiente a montré qu'elle avait habité dans la Côte d'Ivoire sans avoir suivi une prophylaxie chimique avant son départ pour le pays Africain. La maladie a débuté comme une grippe et a coïncidé avec une hausse de maladies virales en Bulgarie. Les examens de laboratoire de l'échantillon nasal faits par la réaction en chaîne de la polymérase (RCP) n'ont pas confirmé le soupçon initial. La condition de la patiente s'est empiré et des études supplémentaires ont dévoilé la malaria cérébrale causée par *Plasmodium falciparum*. Malgré le traitement complexe, le résultat s'est montré fatal.

Conclusion. Certains risques épidémiologiques et cliniques causent l'importation de la malaria en Europe

Corresponding author:

Assoc. Prof. Milena Karcheva, MD, PhD
Medical University – Pleven, 1, Sv. Kl. Ohridski Str., Pleven, Bulgaria, 5800
Email: milena_karcheva@abv.bg, tel. +359 884208

discovery, diagnosis and proper treatment of contaminated individuals.

Keywords: cerebral malaria, *Plasmodium falciparum*, epidemiological risk

INTRODUCTION

After eradication of malaria in almost all European countries in the late 20th century, this parasitic disease occurred again (local transmissions and outbreaks in several countries of Central Asia, the Caucasus and Turkey^{1,2,3}). In 1965, Bulgaria was reported by World Health Organization (WHO) as a country that eradicated malaria. Afterwards, due to extensive relations with tropical and subtropical regions, cases of malaria imported from endemic countries were reported. For the period 1966-2013 their number reached 2979¹.

CASE REPORT

A 36 year-old woman was hospitalized in an infectious and parasitic diseases hospital, with high temperature, reaching 40°C, febrile chills, sweating, non-productive cough, fatigue, pain in muscles and joints. The complaints started five days before. The physical examination detected a severely deteriorated general condition – fever, jaundice of sclera and skin, without rashes. Neurological examination did not show symptoms or signs of meningo-radicular irritation. The initial diagnosis was bilateral interstitial pneumonia, with probable flu aetiology. Flu treatment and antibiotics were prescribed. Laboratory examinations of nasal smear, using polymerase chain reaction (PCR) did not confirm the initial diagnosis. Patient was transferred to an intensive care unit.

Epidemiological history of the patient showed she has stayed in Ivory Coast, without undertaking chemoprophylaxis, prior to her departure to that African country. The first complaints started a week after her arrival in Bulgaria. The parasitological examinations in a national reference laboratory were done. The diagnosis of malaria caused by *Plasmodium falciparum* was made. The microscopic exam, still used as a „golden standard“ for laboratory confirmation of malaria, was performed. A blood specimen

provenant des pays endémiques. Le cas de la malaria cérébrale présenté est la complication la plus fréquente et grave de la malaria falciparum. La chimioprophylaxie appliquée avant le départ pour les régions endémiques ainsi que le monitoring des personnes revenues de ces territoires sont importants pour le dépistage, le diagnostic et le traitement correct institués à temps aux individus contaminés.

Mots-clés: malaria cérébrale, *Plasmodium falciparum*, risque épidémiologique

taken from patient was spread out as a thick blood smear, stained with Romanovsky-Giemsa stain and Ziehl-Neelsen, examined with a 100X oil immersion. The exams during hospitalization discovered „ring form“ trophozoites of *Plasmodium falciparum*. The patient had a parasitemia of 25 000/μl at first exam and 346/μl at second exam.

Laboratory tests: initially increase of leukocytes was recorded, and later on lymphopenia; the patient had thrombocytopenia from the very beginning, with severe anaemic syndrome, persisting to the end. Blood test results correlate with those of other authors⁴. During the hospitalization period, blood urea nitrogen increased, aminotransferases levels also increased, as well as persistent hypoproteinemia with hypoalbuminemia. Acid-base balance showed heavy abnormalities leading to acidosis, heavy hypoxia that required correction treatment. To be noted that values of APH -7.08 and BE -22 are not compatible with normal vital functions.

Instrumental examinations:

1. Abdominal ultrasound examination: on the first day – no morphological abnormality was seen; on the second day – bedside patient examination showed bilateral, basal pleural effusions, estimated about 150 ml on the left and 100 ml on the right side, with liver enlargement – 165 mm the cranio-caudal dimension, portal vein dilatation (14 mm), splenomegaly – thickness of about 7 cm and mild peri-cholecystic fluid.
2. Chest X-ray in stand up position – bilaterally pulmonary prominent markings with perivascular haziness were noted, attributed to interstitial peribronchial inflammation. Lungs and heart X-ray on next day, in supine position, indicated the same aspect.
3. Thoracic computed tomography (CT) scan. Bilateral pleural effusion 280 ml on the left and about 200 ml on the right side, persisting also in the second day. Abdominal organs – increased liver, cranio-caudal size up to 19 cm, with homogenous structure, without inflammatory lesions. No intra-and extra

hepatic biliary ducts dilatation. Enlarged spleen, size 15 cm x 7 cm, with homogenous structure.

4. Cerebral CT scan revealed a normal morphology with normal attenuation values of cerebral parenchyma, no intra and extraxial haemorrhage, symmetric ventricular system with normal capacity, no midline shift or mass effect, intact basal cisterns and subarachnoid spaces, unremarkable structures of posterior cranial fossa.

5. Electrocardiogram (ECG) showed important myocardial and depolarization disturbances: deep Q wave, negative T waves, heart rhythm 120 to 160 beats/min.

The patient maintained haemodynamically unstable, with low blood pressure values (80/60 mm Hg; 70/30 mm Hg; 80/50 mm Hg; 90/50 mm Hg; 86/50 mmHg), and tachycardia. The parasitological exam indicated cerebral tropical malaria. After the etiological diagnosis, treatment with Dihydroartemisinin/Piperazine Phosphate (Malacur 40/320 mg) was initiated. Besides the anti-malarial therapy, substitutive, symptomatic, cardiological therapy, correction of acid and alkaline balance were done. Despite clinical monitoring and adequate intensive treatment the condition of the patient progressively deteriorated until coma. Blood urea nitrogen increased, peripheral oxygen saturation decreased, kidney function deteriorated, with anuria, the patient requiring ventilation and haemodialysis. Finally, she passed away.

DISCUSSION

Malaria is still a serious public health problem around the world. In recent years, *Plasmodium falciparum* was imported from endemic areas^{6,7}. There have been reported cases of tropical malaria, caused by *Plasmodium falciparum*, with severe complications^{8,9}. The reasons for lethal outcome may be:

1. Biological peculiarities of etiological agent (pathogenicity, invasiveness, fast replication, severe clinical course especially in patients with low immunity).
2. Lack of individual chemo prophylaxis prior to departure for endemic areas.
3. Lack of educative measures addressed to people going to these areas⁵.

Chemoprophylaxis is recommended in people travelling to risk regions, one week before departure. Therapeutic regimens, dosage of malaria medicines and duration of treatment should be recommended by a parasitologist. As in subequatorial regions, particularly Africa, there is a danger of contamination with other transmissible infections (yellow fever, heavy haemorrhage fevers), meningococcal infections,

dysentery and others, preventive measures should be taken, as vaccinations, use of repellents and general epidemiological measures. After returning from endemic areas, travellers should be consulted by their family doctors and if a suspicion is raised, they should be referred to specialists. Prolonged stay at home, with clinical signs of severe unclear disease, results in delayed diagnosis and hospitalization. Despite early etiological diagnosis in our case (on the very first day) and initiation of etiological treatment, no favourable evolution has been obtained. Rapid occurrence of signs of cerebral malaria, as well as other complications, are the reasons for lethal outcome¹⁰. Data from the literature report a mortality of over 80-90%. Children and pregnant women have increased risk of complications.

In May 2015, the World Health Assembly adopted WHO Global Technical Strategy for Malaria – a new 15-year road map for malaria control¹. The strategy aims at a further 90% reduction in global malaria incidence and mortality by 2030¹.

CONCLUSIONS

Malaria is a disease imported in Europe from endemic countries. We presented a case of cerebral malaria, the most frequent severe complication of infection with *Plasmodium falciparum*. Chemoprophylaxis prior to departure for endemic regions, as well as monitoring persons who returned from those areas, are important for timely discovery, diagnosis and proper treatment. A safe and effective malaria vaccine would be an important tool for malaria control and reduction of malaria lethal outcomes.

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