DENGUE IN GUINEA: CLINICAL DESCRIPTION AND INVESTIGATION OF AN IMPORTED CASE

Abstract

Introduction: A neglected tropical disease, we report a case of imported dengue fever in the Republic of Guinea in a student permanently resident in a neighbouring country who was visiting Conakry (Guinea) for professional reasons.

Case presentation: Symptoms began on 05/08/2023 with the onset of fever, headache, rhinorrhea and arthralgia motivating self-medication at home from 05 to 09/08/2023. He consulted two private clinics and was admitted to a national hospital before being transferred to a second without improvement. The diagnosis of dengue fever was confirmed on 15/08/2023 by RT-PCR with a CT value of 31.27. The active search for febrile cases showed no increase in reports. No epidemiological link was found. The entomological survey was conducted around the confirmed case.

Conclusion: This report highlights the errors and delays in diagnosing a case of dengue fever. It also highlights the importance of sequencing the isolated viral strain and comparing it with the strain circulating in the country of origin of the case, as well as the need for cross-border collaboration in the context of integrated disease surveillance and response and the International Health Regulations.

Key words: *Dengue, Guinea, Importation, clinical, Investigation, West Africa.*

INTRODUCTION

Dengue fever is an infectious disease caused by one of the four serotypes of the dengue virus. It is transmitted mainly to humans by the Aedes mosquito[1]. Infections with the dengue virus are largely asymptomatic, with only 20% ofcases presenting with a febrile illness accompanied by general symptoms such as joint and muscle pain, rash, nausea and severe headaches[2]. While classic dengue is usually self-limiting, a minority may be threatened by serious complications such as dengue haemorrhagic fever or dengue shock syndrome, which can be fatal[3].

The spread of dengue is due to a combination of factors: increased urbanization, population growth, migration and international relations, displacement and the difficulties of effective vector control[4]. Climate change could be a factor contributing to the global spread of dengue fever[5].It is a rapidly growing health problem, with 2.5 billion people at risk, mainly in South-East Asia, the Caribbean, Central and South America, and more recently in Africa [4,5].

In West Africa, circulation of the virus in human populations was first described in the 1960s in Nigeria[6]. Since then, several African countries have reported sporadic cases or outbreaks associated with this virus. In sub-Saharan Africa, cases of dengue fever are probably under-reported, due to low levels of awareness among healthcare workers and confusion with other common febrile illnesses such as malaria [7].

We report a case of imported dengue fever in the Republic of Guinea in a student permanently resident in a border country who was visiting Conakry (Guinea) for professional reasons.

CASE PRESENTATION

The patient was 37 years old, a student permanently resident in a country bordering the Republic of Guinea as part of his training.

On 1/08/2023, for professional reasons, he left by road (public transport) to arrive in Conakry on 03/08/2023.

Symptoms began on 05/08/2023 with the onset of fever, headache, rhinorrhoea and arthralgia, prompting self-medication at home from 05 to 09/08/2023 with paracetamol, Artemether-Lumefantrine and Vitamin C. Given the persistence of the signs, he consulted a 1st private clinic on 10/08/2023 where the diagnosis of malaria was accepted and he was treated with Artemether-Lumefantrine, perfusable paracetamol, 5% glucosed serum and Vitamin B.That same day, after taking this treatment, he experienced a few episodes of blackish vomiting between lulls, and returned home at around 6pm. On 12/08/2023, he consulted a second private clinic for agitation and obnubilation. An electrocardiogram and brain scan did not reveal any particularities, so he was referred to a 1st national hospital for further treatment. On admission, a diagnosis of severe malaria was made on the basis of a positive Malaria Rapid Diagnostic Test, and treatment with injectable artesunate, chlorpromazine, diazepam, 0.9% saline, cimetidine and ceftriaxone was instituted.On 14/08/2023, in view of the persistence of the symptoms of disturbed consciousness, agitation and desaturation, he was transferred to a second national hospital and then admitted to intensive care. The diagnosis of severe malaria was accepted and the patient received oxygen therapy, injectable artesunate, paracetamol, Propofol, Dexamethaxone, Ceftriaxone and Chlorpromazine.

The alert was passed on to the health authorities, who immediately dispatched a team to take samples. The diagnosis of dengue fever was confirmed on 15/08/2023 by the laboratory using RT-PCR, with a CT value of 31.27. The patient was transferred to the centre for the treatment of diseases with epidemic potential. The course was unfavourable, marked by a progressive deterioration in his clinical condition and death on 21/08/2023.

The active search for febrile cases in health establishments showed no increase in reports. Prevention and control measures were put in place. Forty-nine contacts were identified and monitored at least once a day for a week. In the search for an epidemiological link, we did not find any cases with which there was an epidemiological link with the confirmed case in Guinea. However, confirmed cases of dengue fever have been reported in the country of origin.

The entomological survey was carried out around the confirmed case. A larval survey carried out on all the stagnant water reservoirs enabled Aedes breeding sites to be identified. By characterising these sites in relation to the presence of the patient and estimating the epidemiological risk indices for dengue fever and other arboviroses, we were able to assess the risk of transmission of the virus.

DISCUSSION

This is a report of an imported case of dengue fever in the Republic of Guinea. The investigation revealed errors and delays in diagnosis (Figure). Dengue fever is often unrecognised and under-diagnosed. The similarity of its symptoms to those of other endemic febrile diseases makes diagnosis even more difficult. It is therefore essential to identify the pathogens responsible for these diseases using specific biological diagnostics. These biological diagnostics require high-quality equipment and trained personnel, which is not always the case in low-income countries[8].

Dengue surveillance and epidemic response involve the confirmation, notification and management of symptomatic cases. Effective surveillance and notification are based on patients‘ and doctors’ knowledge of the disease and on a rapid response to confirmed cases[9].In the West African sub-region, Senegal is a dengue hyperendemic country. Since 2017, epidemics have been observed every year in many regions of the country, marked by the co-circulation of DENV1-3 viruses[10]. In Nouakchott, the capital of Mauritania in the Sahara desert, the first laboratory-confirmed epidemic of dengue fever occurred in 2014, revealing DENV-2 [11]. The dengue virus is circulating in Abidjan outside the context of an epidemic, making it necessary to raise awareness of dengue as a possible diagnosis in cases of undifferentiated fever[12]. From 1 August to 31 December 2016, a total of 5094 cases of dengue fever were recorded in health facilities in the city of Ouagadougou[13].

The importation of dengue fever as a result of globalisation is an emerging threat to global health. However, there is a lack of data on global geographical sources and the potential for importation of dengue fever on a global scale[14]. With the global increase in mobility, travel-related illnesses are gaining in importance[15].Imports are a necessary condition for the onset of an epidemic, but the size of the epidemic is largely determined by recognition, notification and the public health response[16]. Over a period of 09 years, 492 cases of dengue fever were diagnosed in travellers returning to Spain from Africa, Latin America and Asia. One imported case of dengue fever was reported in a traveller returning to Japan from Côte d'Ivoire, where a dengue fever epidemic was raging[17].In Senegal in 2017, an imported case of dengue serotype 2 from Cote d'Ivoire was reported. Phylogenetic analysis

based on the complete genome sequence revealed that the isolate was clustered with strains of cosmopolitan genotypes from the epidemic in Burkina Faso in 2016 and those from the ongoing dengue epidemic in Côte d'Ivoire. This suggests a possible spread of strains from the Burkina Faso epidemic to other West African countries, including Côte d'Ivoire and Senegal[18].

A successful active and entomological search of the case coming from a neighbouring country (where a dengue epidemic was in progress) did not reveal any additional cases. The absence of additional confirmed cases in Guinea during the period indicates that this isolated case was imported, highlighting the need to strengthen cross-border collaboration in the context of integrated disease surveillance and response and the International Health Regulations.

One of the limitations of this report is the lack of sequencing of the viral strain isolated in Guinea and its comparison with the strain circulating in the country of origin of the case, and also the lack of cross-border collaboration.

CONCLUSION

We report a case of imported dengue fever in the Republic of Guinea in a student permanently resident in a border country who was visiting Conakry (Guinea) for professional reasons.This report highlights the errors and delays in diagnosing a case of dengue fever. It also highlights the importance of sequencing the isolated viral strain and comparing it with the strain circulating in the country from which the case originated, as well as the need for cross-border collaboration in the context of integrated disease surveillance and response and the International Health Regulations.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Generative AI technologies such as large language models (ChatGPT, COPILOT, etc.) and text-image generators were not used in the writing of this manuscript.

CONSENT

It is not applicable

ETHICAL APPROVAL

The study protocol was approved by the ethics committee of the Faculty of Health Sciences and Technology at Gamal Abdel Nasser University in Conakry.

Patient anonymity and confidentiality were respected.

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ANNEXES