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Febrile Rash: An Early Diagnostic Clue in Ill-Returning Travelers from the Tropical Region

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Abstract: Eruption of rash along with spiking fever in travelers returning from tropics may be suspicious of arboviral diseases, and isolation can mitigate to prevent further transmission in non-endemic countries. The case presented was seen at the Fever Clinic at Hospital for Tropical Diseases in Bangkok, Thailand. The presenting complaints were fever, headache, myalgia, and a distinctive erythematous blanching rash. Despite a negative dengue NS1 test on the initial day, anti-dengue IgM and IgG were detectable on day five of illness. Dengue, a major cause of traveler's fever with rash is of particular concern due to outbreak such as Thailand's, exceeding to over one hundred thousand cases over nine months. The influx of 28 million travelers in 2023, many with naive immunity to many arboviruses, raises fear of transmission to temperature regions. We casually observe this impact in France, where *Aedes albopictus* presence led to 1099 imported dengue cases from Thailand, resulting in six autochthonous clusters. Heightened vigilance is crucial, urging consideration of dengue as a potential diagnosis in travelers with febrile rash, even prior to lab confirmation. Immediate isolation of patients is essential to prevent autochthonous transmission, reducing outbreak risk and averting public health crises.

Keywords: febrile rash; dengue; Thailand; France

A diagnosis for febrile rash in returning travelers from the tropics presents a diagnostic challenge. It should immediately point to arboviral disease to avoid any further transmission in non-endemic country where the vector is widespread.

The diagnosis may be oriented by the epidemiological background, the natural history of the disease, the clinical signs, and routine lab testing[1].

In September 2023, a 39-year-old male presented with fever (39°C), headache, myalgia, and a distinctive rash as shown in (Figure 1). Additionally, laboratory analyses indicated leukocytes at 4700/μL, neutrophils at 3619/μL, lymphocytes at 705/μL, and a platelet count of 177,000/μL. Notably, dengue NS1 test returned negative on the initial day of illness, but anti-dengue IgM and IgG were detectable on day five of illness.

Dengue, a mosquito-borne flavivirus with four serotypes, circulates in *Aedes* mosquitoes and viremic humans, ranking second only to malaria as the primary cause of fever in returning travelers and contribute to cluster outbreaks in individuals with naïve immunity to dengue viruses[2,3].

Dengue virus infection poses a significant health threat to Thailand, particularly in Bangkok. A decade ago, in 2013, the incidence rates were alarmingly high, with 136.6 cases per 100,000 population[4]. In the same year, dengue infection accounted for 40% of the primary causes of illness in patients seeking treatment at the Hospital for Tropical Diseases[5]. The incidence of dengue in 2023

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crossed 111 cases per 100,000 population according to the Ministry of Public Health in Thailand (Figure 2).

This recent large outbreak in Thailand, raises concerns about potential spread to non-endemic areas (Figure 2). The influx of 28 million travelers in 2023, many without immunity, heightens concerns about its transmission to temperate regions where potential vectors may exist.

This is well illustrated in France, a country where *Aedes albopictus* is present. Between May 1, 2023, and September 29, 2023, a total of 1099 cases of dengue were imported in France, and Thailand emerged as the primary source of dengue-infected travelers after French overseas territories. Several of these imported cases led to six autochtonous dengue clusters, involving 31 cases, with 1 to 11 cases per cluster.

This alert emphasizes to heightened vigilance and considering dengue as a potential diagnosis when encountering travelers with febrile rash even before confirmation with lab tests, and take immediate steps to isolate the patients, preventing further autochthonous transmission. These proactive measures are essential for reducing outbreak risk and averting public health crises.

(**a**) (**b**)

Figure 1. Febrile rash in dengue. **(a)** Demonstrating maneuver to exhibit blanching of acute erythematous rash in dengue. This technique exhibits the blanching effect on an acute erythematous rash in dengue. When gentle pressure is applied, the redness temporarily fades, indicating the rash's responsiveness to pressure (**b**) confluent erythema covering entire back area; the distinctive feature is

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the clear demarcation observed on the palm of the co-authors hand when gently pressed against the erythematous surface.

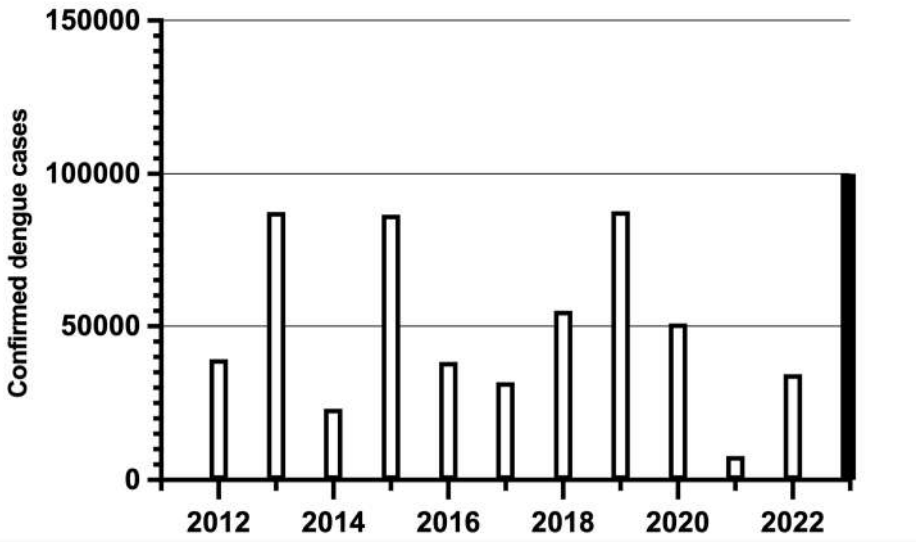

Figure 2. Annual incidence of reported dengue to Ministry of Public Health, Thailand.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki. For this case report, an exemption was obtained from the Ethics Committee of the Faculty of Tropical Medicine, Mahidol University (MUTM-EXMPT 2024-003), on February 12, 2024.

Informed Consent Statement: Informed consent was obtained from the study subject involved in the study.

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Conflicts of Interest: The authors declare no conflict of interest.

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