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Hematologic Parameters of Acute Dengue Fever versus Other Febrile Illnesses in Ambulatory Returned Travelers

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Abstract:

Dengue fever is a mosquito-borne acute febrile illness acquired in the tropics and subtropics. While thrombocytopenia and lymphopenia are well recognized hallmarks of dengue, neutropenia is under-reported in literature on dengue in travelers. We report the frequency and importance of abnormal complete blood count findings in a cohort of febrile returned travelers with dengue or dengue-like illness. A retrospective case control study was undertaken on data from February 2014 to December 2017. Acutely unwell febrile returned travelers presenting to our centre with dengue were compared to those presenting with another febrile illness (OFI) diagnosis. Patient demographics, travel data, and clinical and laboratory parameters from day 1-12 of illness were collected and compared between groups. Eight-teen febrile returned travelers were included in the dengue group and 152 in the OFI group. The most well-represented diagnoses in the OFI group included: non-specific viral syndrome (n=79; 52%), viral URTI (n=20; 13%), lab-confirmed influenza (n=14; 9%), typhoid (n=9; 6%), Chikungunya (n=7; 5%); Zika (n=7; 5%); *P. falciparum* (n=4; 3%), and *P. vivax* (n=3; 2%). The frequency of thrombocytopenia within the dengue cohort (14/18; 78%) was greater than in the OFI group (35/152; 23%) (p<0.0001). Neutropenia was also more common in dengue patients (15/18; 83%) compared to those with OFI (19/152; 12.5%) (p<0.0001), as was lymphopenia (17/18 [94%] in the dengue group versus 54/152 [36%] in the OFI group; p<0.0001). When analyzed by day of illness, significantly lower mean platelet and neutrophil counts were evident in patients infected with dengue compared to those in the OFI group (p<0.0001). In patients with a relevant travel history, the constellation of neutropenia, lymphopenia, and thrombocytopenia should help guide a provisional diagnosis of acute dengue infection. As advanced diagnostic testing is often inaccurate or delayed by prolonged turnaround times, these simple laboratory features can guide the early care, patient counselling, and follow-up of febrile returned travelers with suspected dengue infection.