

A response to “Dengue haemorrhagic encephalitis: Report of a child from Myanmar with bilateral thalamic involvement, possibility of concurrent infection”

We would like to thank Yasri and Wiwanitkit, for draw attention to the possibility of concurrent infection with Japanese encephalitis (JE) and influenza A¹, in our report of a child with dengue hemorrhagic encephalitis with bilateral thalamic involvement.²

Dengue and Japanese encephalitis virus co-infection

As dengue and JE viruses share the same epidemiology, and are both common infections in Myanmar, it is indeed possible to have coinfection with JE. In our patient, we sent CSF and serum for JE PCR which was negative. There was thus no evidence of concurrent JE infection in our patient. The other possibility is serological cross-reactivity between dengue and JE, as both belong to the same family of *Flaviviridae*. Garg *et al.* reported a case of acute encephalitis syndrome positive for IgM antibodies— in serum as well as in cerebrospinal fluid (CSF)—against both dengue virus and JE.³ The authors suggested measurement of IgM titer in serum and CSF samples for both dengue and JE, patients who have higher CSF IgM titer in comparison to the serum titer should be considered to have the CNS infection.³ However, in our patient, as NS1 antigen and PCR was positive for dengue in serum, and PCR in CSF, whereas PCR for JE in serum and CSF were negative, there was no evidence to support a concurrent dengue and JE infection, and cross-reactivity was not an issue. IgM for JE was not performed in our patient.

Dengue and influenza virus co-infection

Both dengue fever and influenza are febrile illnesses, but with different clinical manifestations and management.⁴ Concurrent outbreaks of influenza and dengue fever have been reported in various tropical countries, including Myanmar.⁵ There was case report on four adult patients with fatal influenza A (H1N1) pdm09 and dengue virus co-infections from Brazil.⁶ All cases were laboratory-confirmed for both infections. They all presented mainly with respiratory symptoms complicated with multisystem involvement and expired within 7 to 10 days of onset of illness. Three of the cases had underlying obesity and hypertension, known to be risk factors for severe disease⁷, none of the patients had encephalitic illness. Literature search of case reports to date of dengue and influenza A co-infection revealed such cases were complicated by respiratory and then multisystem failure whereas neurological complications was not reported.^{8,9}

Perez *et al.* presented four dengue-influenza A H1N1 co-infections in children in Mexico.¹⁰ All four patients were RT-PCR positive for both viruses. Bilateral interstitial and/or alveolar infiltrates were present in all the cases, again none had neurological manifestation. Three patients had a history of asthma, a known risk factor both for severe dengue and influenza.¹¹

In conclusion, patients with dengue-influenza co-infection usually present with respiratory manifestations, whereas in our patient, there was no respiratory involvement. We did not do any test for influenza virus as there was no respiratory symptom to suggest the diagnosis.

¹Khine Mi Mi Ko, ¹Kyaw Linn, ¹Nay Linn, ²Si-Lei Fong

¹*Pediatric Neurology Unit, Yangon Children Hospital, Yangon, Myanmar;* ²*Neurology Division, University of Malaya, Kuala Lumpur, Malaysia*

Address correspondence to: Dr Khine Mi Mi Ko, Consultant, Paediatric Neurology Unit, Yangon Children Hospital, Pyidaungsu Yeiktha Road, Dagon Township, 11191 Yangon, Union of Myanmar. Tel: + (95) 9 5013797, E-mail: khinemimiko@gmail.com

REFERENCES

1. Yasri S, Wiwanitkit V. Dengue haemorrhagic encephalitis with bilateral thalamic involvement, possibility of concurrent infection. *Neurol Asia* 2018;23(4):

2. Ko KMM, Khine WK, Linn K, *et al.* Dengue haemorrhagic encephalitis: Report of a child from Myanmar with bilateral thalamic involvement. *Neurol Asia* 2018;23(3):283-6
3. Garg RK, Malhotra HS, Gupta A, Kumar N, Jain A. Concurrent dengue virus and Japanese encephalitis virus infection of the brain: is it co-infection or co-detection? *Infection* 2012;40(5):589-93.
4. Hussain R, Al-Omar I, Memish ZA. The diagnostic challenge of pandemic H1N1 2009 virus in a dengue-endemic region: A case report of combined infection in Jeddah, Kingdom of Saudi Arabia. *J Infect Public Health* 2012; 5:199-202.
5. Thaug U, Minq CK, Thein M. Dengue haemorrhagic fever in Burma. *Southeast Asian J Trop Med Public Health* 1975;6:580-91.
6. Perdigao AC, Ramalho IL, Guedes MI, *et al.* Coinfection with influenza A (H1N1) pdm09 and dengue virus in fatal cases. *Mem Inst Oswaldo Cruz* 2016; 111(9):588-91.
7. Morgan OW, Bramley A, Fowlkes A, *et al.* Morbid obesity as a risk factor for hospitalization and death due to 2009 pandemic influenza A(H1N1) disease. *PLoS ONE* 2010; 5(3): e9694.
8. Masayoshi S, Masahiro B, Keiji J, *et al.* Influenza A-associated encephalopathy with bilateral thalamic necrosis in Japan. *Clin Infect Dis* 2000;31:611-3.
9. Offiah C, Hall E. Acute necrotizing encephalopathy associated with novel influenza H1N1 (pdm09) infection: MRI and correlation with brain necropsy. *J Pediatr Neuroradiol* 2013;2:319-24.
10. Perez MA, Gordon A, Sanchez F, *et al.* Severe co-infections of dengue and pandemic influenza A H1N1 viruses. *Pediatr Infect Dis J* 2010; 29(11):1052-5.
11. Miller EK, Griffin MR, Edwards KM, *et al.* Influenza burden for children with asthma. *Pediatrics* 2008; 121:1-8.