

Concomitant dengue fever in Varicella zoster infection – A rare presentation

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SUMMARY

Varicella zoster infection is one of the self-limiting viral infections during childhood and dengue fever is an endemic infection in Malaysia, which commonly occurs in the form of nonspecific febrile illness at the initial stage. It is rare for the two viral infections to occur simultaneously. A case of dengue fever without warning sign in a five-year old girl was reported, with early symptoms of fever and vesicular rashes. She was clinically diagnosed with varicella zoster infection during the first visit. Surprisingly, she remained febrile even on day six of illness despite no new vesicular lesions on her skin. Due to suspicion of another infection, follow-up investigation was done and revealed isolated thrombocytopenia. This finding was confirmed with positive NS1Ag. A case of rare dengue fever concomitant with varicella zoster infection was reported.

INTRODUCTION

Fever and rashes are the common symptoms found in primary care health setting among paediatric patients. The fever patterns and onset of rashes are important clues in making a diagnosis, even without the aid of blood investigation.¹ In general, Varicella zoster infection among children is mild, in which the disease tends to be afebrile within few days. Therefore, other concomitant illnesses are to be ruled out if the fever persists.^{1,2} Dengue fever can be asymptomatic but normally, it is accompanied with mild febrile illness and other typical symptoms.³ Inadequate monitoring and hydration may place the patients in life-threatening shock. Dengue fever is indeed a public concern and the primary care providers are responsible to ensure its early detection. A high suspicion index is required even among the patients who already diagnosed with other infectious diseases. Until now, there is no case of concomitant two viral exanthems involving dengue fever being reported. If this takes place, it is hard to diagnose and easy to miss.

CASE REPORT

A five-year-old girl with unknown illness was seen at the Jaya Gading Health Clinic after having fever for one day, and showing symptom of vesicular rashes over her trunk. The lesions appeared in the form of macules, before rapidly turning into papules, followed by vesicles. There were no other symptoms at that time. She was clinically treated for Varicella zoster infection. Her family members did not show

Table I: Full Blood Count (FBC) result and Dengue Rapid Combo test result during the 6th day of illness

Parameters	Value
Total white count	10.5 x 10 ⁹ /L
Lymphocytes	3.0 x 10 ⁹ /L
Monocytes	0.5 x 10 ⁹ /L
Granulocytes	7.0 x 10 ⁹ /L
Haemoglobin	11.2 g/dL
Haematocrit	31.7 %
Platelet	126 x 10 ⁹ /L
NS1Ag	Positive
IgG	Negative
IgM	Negative

similar symptoms. At day three of illness, her mother brought her to the clinic again due to persistent fever, where the patient had new vesicular lesions. They were reassured for monitoring at home. Her third visit was on the day six of illness, where her fever did not subside despite the absence of new lesions. Any concomitant source of infection could not be detected. The skin examination revealed the existence of macular rashes and crusted lesions, which may be associated with V.zoster infection. Because the patient stays in a dengue-prone area, a full blood count (FBC) test was conducted and it was found that the patient experienced isolated thrombocytopenia, as shown in Table I.

To confirm with the diagnosis of dengue fever, the patient underwent the dengue combo rapid test. The results confirmed that the patient was infected with dengue due to positive NS1Ag. She showed no symptoms of arthralgia, myalgia or retro-orbital pain. There was also no warning symptom, making the diagnosis a bit atypical. She was treated with reassurance and close monitoring up to day 11, until she had recovered well. She was able to tolerate orally at home and followed the prescribed advices.

DISCUSSION

Fever and rashes are the common symptoms among children treated in primary care health setting. The characteristics of fever and onset of rashes are crucial to narrow down the provisional diagnosis.¹⁻³ Out of many viral exanthems, V.zoster infection is easy to recognise due to the pathognomonic features of vesicular rashes within 24 hours after the onset of fever. The rashes are widespread from trunk to peripheral limbs.¹⁻³ These features appeared on the five-year old patient.

This article was accepted: 1 June 2019

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As a safety netting, as *V.zoster* infection is clinically benign among children, her parents were advised to return to the clinic if the fever still persists. This is in line with the World Health Organization Integrated Management of Childhood Illness (IMCI) approach. The patient and care taker benefit the advice and came for follow-up multiple times. During the second visit, the diagnosis still favoured the *V.zoster* infection due to the existence of new vesicular skin lesions on the third day of febrile phase. Therefore, the physician did not proceed with blood investigation yet. Nevertheless, other sources of infection were also looked into. The possibility of dengue fever (DF) became prevalent when the patient came to the clinic for the third time due to persistent fever on day six of illness, even with the absence of new vesicular lesions.^{2,3} The child had no other symptoms except macular rashes and crusted lesions, which may be associated with resolving varicella zoster infection. But, the only sign of possibility of dengue fever is that the patient comes from a dengue-prone area. This was proven by full blood count test.

The patient's full blood count revealed isolated thrombocytopenia without concomitant leucopenia. At that time, the most appropriate diagnosis for her symptoms was to look into infective causes that resulted in persistent fever. Since the patient had no history of travelling out of her place and in contact with contaminated water, the most accurate diagnosis was 'probable Dengue Fever'. Even though dengue fever is typically accompanied with leucopenia and thrombocytopenia during the critical phase, sometimes patients infected with dengue can only have one abnormal blood parameter. This is proved by previous study which showed normal leukocyte count can present in up to 55% cases of laboratory proven diagnosis of dengue infection.⁴ Therefore probable diagnosis of dengue fever need to be confirmed by the positive NS1 antigen from the dengue combo rapid test. This test is helpful in the primary care health setting, as has been promoted by the Ministry of Health Malaysia. It cuts down diagnostic time and minimises the occurrences of undetected dengue fever at the first point of primary care visit. The test has high sensitivity up to 93%, in which antigenemia may persist for few days upon resolution of primary infection.⁵ In this case, the NS1 antigen was detected without dengue antibody in the patient's blood, hence it was concluded that the patient was probably infected with dengue virus less than five days from the point of test, which is since the third day she was infected with *V.zoster* infection, according to the timeline.^{3,5} Therefore, it was clear that the patient was initially infected with the virus and then followed by dengue infection at day three of *V.zoster* illness when she was still febrile. This explains the positive result of NS1 test at day four of dengue infection (day six of total days of illness). NS1 test is highly specific, in which the probability of false positive is very low unless the patient has underlying haematological or autoimmune disorder that

may contribute to false positive, but this is not the case for this patient.

Looking at the typical rashes of *V.zoster* infection, there is a 'cropping' phenomenon in which all vesicles, papules and crusting lesions are centred to a spot, including oral mucosa.^{1,3} Therefore, if the infection is then followed by dengue fever, the clinical clues of dengue in the form of rubelliform maculopapular rashes may be shadowed by the remaining *V.zoster* rashes that resemble dengue fever rashes. However, in this case, the atypical presentation of the maculopapular rashes was more prominent despite the crusted lesions had dried off.^{1,3} Another issue is regarding the monitoring of patient infected with concomitant dengue fever and *V.zoster* infection. There is no specific indication for admission for patients infected with dengue fever and other concomitant viral infection. This is supposed to be based on common principles of admission indications such as presence of warning signs and patients' inability to tolerate orally.³ In this case, the patient's skin lesions already dried off and she was able to tolerate fluids and foods as usual. Therefore, the child was treated at the clinic without being admitted. Eventually, the patient recovered from her fever and her platelet did increase well.

CONCLUSION

This case has proved that appropriate history taking including locality of the patient's home with high index of clinical suspicions and judgement is indeed helpful in diagnosing Dengue Fever (DF) even in a patient whom already been treated for other viral infection.

ACKNOWLEDGEMENT

We would like to thank the staff of Klinik Kesihatan Jaya Gading for their sincere help in contributing to the success of this case report.

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