

An unfortunate case of measles infection in pregnancy mistaken for dengue fever

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ABSTRACT

We present an uncommon case of an acute respiratory illness in a pregnant tourist in her second trimester. She is of foreign descent and was travelling from the Middle East to Singapore. She was initially referred by the general practitioner in Singapore for suspected acute dengue fever in view of her symptoms of fever, rash and conjunctivitis. After the initial negative screen for dengue and respiratory multiplex, she was later tested for measles due to her travel history. She was finally confirmed with a positive measles polymerase chain reaction (PCR) test. Unfortunately, her pregnancy was complicated by a septic abortion on the 3rd day after admission, leading to a uterine curettage due to a retained placenta. She was discharged home in good condition after supportive treatment. With the resumption of global travel post the COVID-19 pandemic, it is important to be mindful that there is an expected rise in the incidence of other infectious diseases such as measles, and to remain vigilant with detailed clinical history taking in patients who are travelling from abroad. As there is no curative treatment of measles, an early clinical suspicion is crucial for an early diagnosis. This is especially important for preventing an outbreak within vulnerable communities.

KEYWORDS

Measles, dengue, pregnancy, septic abortion, Singapore.

Introduction

In Singapore, measles is an uncommon infection that shares many overlapping clinical features with dengue fever, a viral illness endemic to tropical regions such as Singapore^[1]. The COVID-19 pandemic has increased the risk of a global measles outbreak, due to the disruption to measles vaccinations. It is important to raise awareness that the incidence of measles is expected to rise with the resumption of global travel post COVID-19 pandemic. A missed diagnosis may increase the risk of catastrophic outbreaks in vulnerable communities; hence, a high index of suspicion and detailed travel history is essential.

Case report

We present a case of a 37-year-old pregnant women who was referred to the acute care centre of our hospital with suspected acute dengue fever. She reported 3 previous uneventful pregnancies with full term normal vaginal deliveries. The gestational age at admission was 20 weeks. She was a tourist travelling to Singapore from the Middle East. She presented with fever associated with a productive cough, a generalized body rash, vomiting and coryza of 2 days duration. She did not have any shortness of breath, chest pain, abdominal pain or per vaginal bleeding. Urinary and bowel symptoms were unremarkable.

On examination, she appeared septic with a temperature of 38.7° C degrees but was alert and responsive and still able to speak in sentences. She had acute bilateral conjunctivitis and there were no Koplik's spots observed. There was a generalized blanching maculopapular rash over her trunk. Her heart, respiratory system and abdominal examinations were normal.

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A transabdominal ultrasound scan showed a viable fetus corresponding with a gestational age of 20 weeks and 2 days.

The differential diagnosis upon admission was of acute dengue fever in view of the febrile exanthem and conjunctivitis. Upon admission to the negative pressure isolation ward her white blood cells were 10 x 10⁹/litre, C-reactive protein was 48 mg/litre and serum lactate was 1.5 mmol/L. A respiratory multiplex swab and dengue serology screen with NS1Ag both returned negative. A septic workup performed also showed negative blood and urine cultures. A chest x-ray was normal and her rubella immunoglobulin G was negative. She had persistent fever after admission but remained clinically stable. On her second day of admission, a blood measles reverse transcriptase polymerase chain reaction test was ordered due to pyrexia for unknown origin, which returned as positive, confirming gestational measles infection.

Upon further contact tracing, it was revealed that the patient's husband had another cohabitant wife who was also pregnant at the same time. We advised for the other pregnant wife to be

tested for measles immunity immediately as it was also unclear if she had received any measles-mumps-rubella (MMR) vaccinations. A serology test for rubella immunoglobulin M also returned negative for the patient, and she was likely unvaccinated against MMR. We also tested the patient for Middle East respiratory syndrome coronavirus (MERS-COV), which returned negative. A daily fetal doppler during the admission confirmed ongoing fetal viability.

On the third day of admission, the patient developed sudden lower abdominal cramps with vaginal bleeding. She suffered a spontaneous mid trimester abortion. This was complicated by a retained placenta requiring uterine curettage. The patient recovered well post-surgery and was discharged in good health condition on the 7th after admission. She was agreeable for the MMR vaccination at her follow up appointment, expressing her desire to conceive again soon. Additionally, psychological support was offered but she refused further review. She was counselled for the need to complete her vaccinations prior to conceiving again, and advised for regular antenatal appointments during each pregnancy.

Discussion

Measles is an airborne, highly contagious disease that has made a comeback in 2019 prior to the COVID-19 pandemic. The 2019 measles outbreak in USA was linked to travel related cases that reached under vaccinated populations^[2]. Over 61 million doses of measles-containing vaccines were postponed or missed due to COVID-19 related delays in supplementary immunization activities, increasing the risk of bigger outbreaks around the world^[3]. Therefore, it is important to highlight the increased risks of a global measles outbreak in a post COVID-19 pandemic era, assisted by the resurgence of global travel. According to the World Health Organization, the top 3 nations with measles outbreaks as of June 2023 are India, Yemen and Pakistan.

Since the COVID-19 pandemic, we have observed how global healthcare systems have transformed to meet the needs of caring for infectious diseases, especially acute respiratory illnesses. With the immense focus on the COVID-19 pandemic since 2020, we have seen how massive infection control policies, and the shutdown of global travel, have caused a drastic drop in the incidence of all other respiratory viruses in Singapore^[4]. In our hospital, we have enhanced the protocols for patients presenting with acute respiratory infections in view of the COVID-19 pandemic, with the focus on early diagnosing COVID-19 infection. Healthcare personnel are well trained on COVID-19 infections, while the infectious diseases that were previously a global concern have lost much of its focus, such as MERS-COV, and measles. In addition, with only 3 reported cases of measles infections in Singapore in 2022, it is a disease that most healthcare practitioners in Singapore have never treated^[1]. Therefore, it is understandable that measles infections are not a top differential diagnosis for the majority of febrile exanthems and respiratory illnesses in Singapore, and are easily mistaken for more common diseases such as acute dengue fever.

In measles infections, the “three Cs” include presenting with a prodrome of high fever with a cough, coryza, and conjunctivitis. The measles prodrome usually presents 3 to 4 days prior to the rash. Koplik’s spots may also appear on the buccal mucosa towards the end of the prodromal phase, followed by the appearance of a blanching maculopapular rash, that often starts from the head, before spreading to the trunk and lower extremities. The measles rash then fades starting from the head, to the trunk and then lastly, from the lower extremities. The average incubation period lasts 10 to 12 days with the onset of the rash on day 14 post-exposure. Once diagnosed, the treatment for measles is supportive, there is no specific anti-viral therapy^[5]. Endemic to Singapore, acute dengue fever is a differential diagnosis for measles infection that has a much higher prevalence in Singapore^[6]. Dengue in pregnancy is also characterized by fever, vomiting, generalized rash and body aches^[7]. Laboratory tests are required to differentiate the 2 diseases, as both dengue and measles have overlapping clinical features. A high index of suspicion for measles is required for all patients presenting with a febrile exanthem, especially from travellers from countries facing measles outbreaks.

It is known that measles infection in pregnancy increases the risk of complications, and can lead to adverse pregnancy outcomes^[8-11]. Pregnant women infected with measles are more likely to develop pneumonia, and have increased mortality compared to non-pregnant women. Adverse pregnancy outcomes include pregnancy loss, preterm birth and low birth weight, while the risk of congenital defects do not appear to be increased^[8]. Unfortunately, even with an earlier diagnosis, it would have unlikely altered the course of events in our patient, since to date anti-viral or curative treatments do not exist for measles infections. Contact tracing is extremely important, to reduce the risk of transmission to vulnerable communities. Measles has a 90% infection rate, and despite previous vaccination, exposed individuals including healthcare workers remain at risk of infection^[12,13]. Post infection, it is still important to discuss MMR vaccinations. Our patient remained at risk of rubella infection, another virus associated with poor pregnancy outcomes. It was most unfortunate that the patient contracted measles during pregnancy, leading to an unfortunate pregnancy loss. We are fortunate to have isolated her upon presentation, reducing the risk of a catastrophic outbreak in a maternal hospital. Measles remains an important differential diagnosis for all viral exanthems presenting during pregnancy, and it can result in adverse outcomes. A careful travel history should be patiently elicited, especially for travellers from high-risk regions.

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Conflict of interest

Author declares having no conflict of interest.

Informed consent

Informed consent was obtained from the patient for the publication of this case report.

Author contributions

The author confirms sole responsibility for the following: Collection of the information of the case and preparation of the document.