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CASE REPORT

Spontaneous Abortion due to Maternal Listeriosis: A case report

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ABSTRACT

Listeriosis is an infection caused by *Listeria monocytogenes*, which is a foodborne pathogen. Maternal listeriosis is clinically challenging to diagnose as gastrointestinal symptoms are not the main feature. Intrauterine infection can lead to spontaneous abortion, preterm delivery, and intrauterine foetal death. We report a case of maternal listeriosis that had presented to our emergency department with spontaneous abortion.

Keywords: listeria monocytogenes, listeriosis, foetus, foodborne, pregnancy.

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Introduction

Listeriosis is an infection caused by *Listeria monocytogenes*, which is a foodborne pathogen. Pregnant women, their fetuses, and the elderly are more susceptible to infection. Animals are the natural reservoir for this bacterium. However, it can also be found in soil, raw vegetables, uncooked meat, and unpasteurized dairy products. Infection occurs when the patient consumes food contaminated by it.

Intrauterine infection may lead to the mother having an abortion, stillbirth, premature delivery and chorioamnionitis. A recent study reported that *Listeria monocytogenes* was detected in 3.7% of women with spontaneous abortion[1]. In another study, mothers who had listeria infection were found to have a significantly higher rate of preterm delivery (61.3%) and stillbirth (13.5%) compared to those not infected[2]. Complications to the fetus include neonatal sepsis, neonatal meningitis, and neonatal death. A study reported that the morbidity in the fetus could go as high as 30%[3]. An umbrella review involving 330 studies reported that 66% of listeriosis infections occur in the third trimester, while only 3% occur in the first trimester of pregnancy[4].

We found only a limited number of case reports on maternal listeriosis from Malaysia. Therefore, we report here a case of maternal listeriosis that presented with a spontaneous abortion to the emergency department of Hospital Universiti Sains Malaysia.

Case Report

A 29-year-old Malay, para 2-0-0-2, at 20 weeks of gestation, presented to the Emergency Department (ED), Hospital Universiti Sains Malaysia complaining of fever with chills and rigors for 3 days. It was associated with lower abdominal pain and vaginal bleeding. Upon arrival at the ED, she passed out an abortus with the placenta, weighing 180 grams with minimal blood loss. The abortus appeared fresh and was non-viable upon delivery. The placenta was intact, appeared normal, and had no foul smell. She denied consumption of unpasteurised cheese, uncooked meat, or poultry. She also denied taking any medication. There were no other associated gastrointestinal, respiratory, cardiovascular, or urinary tract symptoms.

On physical examination, her temperature was 38.2°C. Her vital signs were stable, and there were no abnormalities seen. Full blood count showed leukocytosis (white blood cell count: 18.9 x 10^9/L). A differential count was not done. There was mild anemia (hemoglobin level: 10.2 g/dL) and normal platelet level (273 x 10^9/L). Her renal and liver function tests were within normal range.

Blood and placental tissue samples were sent to the microbiology laboratory for culture and sensitivity tests. Microscopy revealed short Gram-positive bacilli (Fig. 1). The catalase test was positive. The culture revealed small and smooth β-hemolytic colonies on blood agar incubated in 5% CO_2 (Fig. 2). An "umbrella" growth pattern was seen in a semisolid motility medium (Fig. 3). The Christie–Atkins–Munch-Peterson (CAMP) test was positive. Identification using VITEK® 2 system revealed *Listeria monocytogenes* with excellent identification (98%). The antibiotic susceptibility test showed that the isolate was sensitive to ampicillin and trimethoprim-sulfamethoxazole. Cefuroxime and metronidazole were not tested as these antibiotics are not included in the Clinical and Laboratory Standards Institute (CLSI) antimicrobial susceptibility testing standards guideline, hence do not have any reference cut-off point.

On admission, the patient was given intravenous (IV) cefuroxime 750 mg every 8 hours and IV metronidazole 500 mg every 8 hours as empirical treatment for septic miscarriage. The fever subsided, and the patient recovered well. There were no clinical sign or symptom of genitourinary infection. The patient was discharged on the third day of admission before the microbiological laboratory results were available. The patient was on IV antibiotics for three days. The antibiotic was changed to oral ampicillin and given to continue for one week after discharge. Follow-up was done at the post-natal clinic. A blood culture taken on the follow-up revealed no growth.

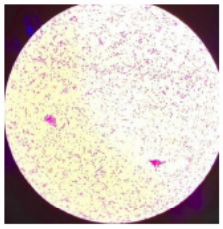

Fig. 1. Short Gram-positive bacilli on microscopy.

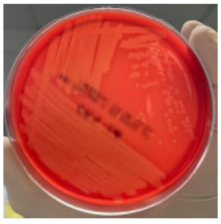

Fig. 2. Small and smooth β-hemolytic colonies on blood agar incubated in 5% CO_2.

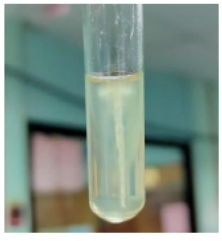

Fig. 3. "umbrella" growth pattern seen in a semisolid motility medium.

Discussion

The most common risk factor for infection is consuming unpasteurized dairy products due to the bacteria's ability to grow and multiply at low temperatures, such as in refrigerated food[5]. The patient denied consuming unpasteurised cheese, uncooked meat, or poultry. Trying to ascertain the food may be challenging, partly contributed by the extended incubation period, which may last up to 6 weeks in pregnancy[6]. A study done in Malaysia reported that 20% of the raw chicken meat sold at hypermarkets and wet markets had *Listeria monocytogenes*[7]. Another study found *Listeria monocytogenes* in ready-to-eat foods such as cooked satay, prawns, squids, clams, chicken dishes, cucumber and peanut sauce from street vendors, canteens, and restaurants[8].

Maternal listeriosis is clinically challenging to diagnose as gastrointestinal symptoms are not the main feature[6]. A study reported that women with maternal listeriosis had symptoms of a flu-like illness (32%), fever (65%), backache (21.5%), headache (10.5%), vomiting/diarrhea (7%), muscle pains (4%) and sore throat (4%) while 29% of the women were asymptomatic[9]. In another study, they found abdominal pain (88.2%), prolonged rupture of membranes (23%) and no fetal movement (13.7%) as the three most common symptoms in maternal listeriosis[10].

Hence, clinicians may miss the diagnosis. Therefore, the microbiology laboratory plays an important role. The organism grows well and can

be isolated from samples taken from the blood and placenta. Both VITEK® 2 system and matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) can be used to confirm the diagnosis[11].

The intracellular survival ability of the bacteria protects it from the host's innate and adaptive immune responses. Currently, no randomised controlled trial has yet demonstrated the most effective treatment of listeriosis[12]. However, it is usually susceptible to ampicillin.

Listeriosis usually causes a mild illness in the mother[13]. The patient was initially given cefuroxime and metronidazole as empirical treatment, following the national guideline for septic miscarriage[14]. The patient was discharged from hospital with 7 days of oral ampicillin and had recovered fully. Nevertheless, The American College of Obstetricians and Gynecologists and the Centres for Disease Control and Prevention (CDC) recommend a high dose of intravenous ampicillin (at least 6 g/day) for at least 14 days in non-allergic pregnant patients[15].

Conclusion

In conclusion, clinicians should be aware of maternal listeriosis due to the high risk of morbidity and mortality to the fetus so that prompt investigation and proper treatment can be given.

Potential conflicts of interest

The authors declare no conflicts of interest.

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