

Introduction

Sepsis is a leading cause of morbidity and mortality in pregnant patients throughout the world. Pregnancy exists as a universal criterion of exclusion in most studies regarding septic shock, leading to scarce data on its management in pregnant patients. Recent data shows an increasing incidence and severity of sepsis among obstetric patients. The WHO estimates the global prevalence of maternal sepsis to be ~4.5% among live births; other data shows that it accounts for 11% of maternal deaths worldwide⁴. Shockingly, pregnancy-associated severe sepsis in the United States increased nearly threefold between 2000 and 2010⁴. Though concerning, the overall mortality due to sepsis in pregnant patients is lower than that in the general population, likely due to the paturient's younger age³. The most common pathogens reported in maternal sepsis are E coli, streptococcus, and staphylococcus, though numerous other bugs have been implicated (including case reports of severe candidal sepsis)⁴. Management does not wildly differ from that of sepsis in the general population, but fetal considerations may create difficult situations for those caring for these patients. One important aspect of improving outcomes in septic pregnant patients is prioritizing early recognition of sepsis as physiologic changes of pregnancy can mask signs and symptoms often used for diagnosis. Here we present a case of Group C streptococcus septic shock in a pregnant patient and the resulting sequelae.



Case Report

A 29-year-old G4P3 female at 29 weeks Estimated Gestational Age presented to our Obstetrical Emergency Department endorsing 24 hours of diarrhea, nausea, malaise, URI symptomology, and what was described as "contractional" abdominal pain. She was quickly noted to be severely hypotensive and tachycardic. She underwent fluid resuscitation (FR) while labs were pending: the only initial concerning laboratory finding was a lactic acidosis (3.7). This lactic acidosis was trended and worsened despite what was thought to be adequate FR. Fetal monitoring showed prolonged decelerations, prompting the obstetrical team to initiate a magnesium infusion. A chest radiograph was performed to evaluate her URI symptoms (pictured); it was notable for nonspecific bilateral airspace disease. She promptly developed supplemental oxygen needs likely due to a combination of her active illness and fluid resuscitation. Broad spectrum antibiotics were initiated due to suspicion for sepsis.

She was admitted to Labor and Delivery the following morning for monitoring. Despite initial improvement in hemodynamics and fetal heart tracings, she again became hypotensive and spiked a high fever. The obstetrical anesthesia team unsuccessfully attempted management via further fluid resuscitation and vasopressor therapy. Shortly after, the decision was made to proceed to the operating room for emergent Cesarean section. This was performed under general endotracheal anesthesia with standard ASA monitors and invasive blood pressure monitoring via arterial cannulation. Her surgical course was uncomplicated, and she delivered a viable infant. Difficult surgical hemostasis prompted suspicion for DIC. Transfusion of blood products was initiated while blood counts and coagulopathy labs were pending. She was found to be persistently hypoxic despite maximal ventilatory settings, and ARDS was diagnosed based on her severe P/F ratio via Point-of-Care labs. The patient remained intubated and was transferred to the ICU postoperatively, where she underwent temporary dialysis line placement, vasopressor therapy, and further diagnostics.

Blood cultures returned positive for Group C Streptococcus. Antibiotics were appropriately narrowed based on sensitivities. Though the patient was eventually discharged to an inpatient rehabilitation facility, her ICU stay was prolonged and complicated by acute renal failure requiring dialysis, severe ARDS requiring proning/paralysis, refractory shock requiring stress-dose steroids, multiple transfusions, abdominal bleed requiring Interventional Radiology embolization, and critical ischemia of her distal left lower extremity requiring hyperbaric oxygen therapy and eventual trans-metatarsal amputation.

References

- 1) Bauer, Melissa E., et al. "Maternal Deaths Due to Sepsis in the State of Michigan, 1999–2006." *Obstetrics & Gynecology*, vol. 126, no. 4, 2015, pp. 747–752.
- 2) Burlinson, C.E.G., et al. "Sepsis in Pregnancy and the Puerperium." *International Journal of Obstetric Anesthesia*, vol. 36, 2018, pp. 96–107.
- 3) Cordioli, Ricardo Luiz, et al. "Sepsis and Pregnancy: Do We Know How to Treat This Situation?" *Revista Brasileira De Terapia Intensiva*, vol. 25, no. 4, 2013.
- 4) Fan, Shang-Rong, et al. "New Concept and Management for Sepsis in Pregnancy and the Puerperium." *Maternal-Fetal Medicine*, vol. 2, no. 4, 2020, pp. 231–239.
- 5) Kankuri, Esko, et al. "Incidence, Treatment and Outcome of Peripartum Sepsis." *Acta Obstetricia Et Gynecologica Scandinavica*, vol. 82, no. 8, 2003, pp. 730–735.

Discussion

This case illustrates the late and severe presentation of maternal sepsis. The normal physiologic changes of pregnancy (ie expansion of plasma volume) can mask signs of sepsis until late in its course². Respiratory dysfunction and coagulopathy are the most common presentation of end-organ dysfunction in maternal sepsis. It is important to note that the vast majority of septic pregnant patients present afebrile and frequently never develop a fever¹. Complications include premature birth, fetal infections, higher fetal mortality, and higher rates of Cesarean section⁵. Sepsis screening tools specifically developed for pregnant patients may be useful as they take into account the physiologic changes of pregnancy that contribute to masked signs and symptoms. Providers' high suspicion for sepsis in pregnant patients can serve to improve the morbidity and mortality of mothers across the world. Many committees recommend "think sepsis" when presented with any unwell pregnant patient.

