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# Clostridium perfringens bacteraemia in pregnancy: haemolysis, haemorrhage, haemodialysis and hyperkalaemic cardiac arrest

D Ginty, K Cranfield
Royal Victoria Infirmary, Newcastle-Upon-Tyne

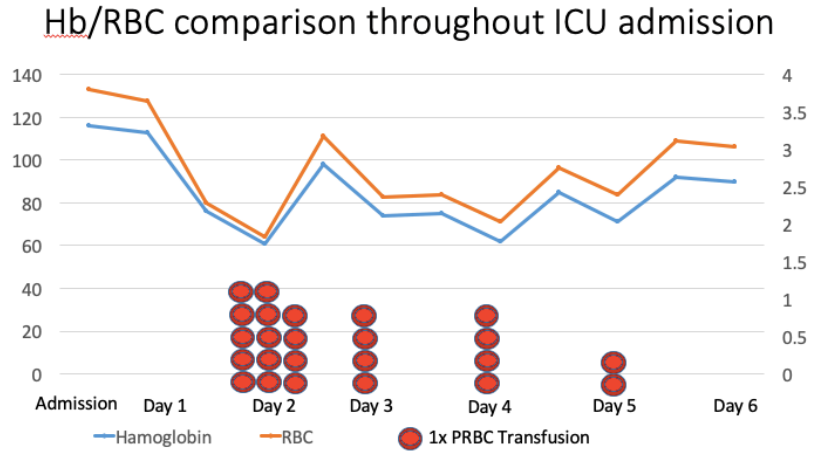
## Introduction

Clostridium perfringens infection is a recognised cause of intravascular hemolysis and associated with a mortality of 27-58%.[1] It is historically associated with illegal terminations. We describe a rare case of chorioamnionitis secondary to clostridium perfringens with sequelae including; disseminated intravascular coagulopathy (DIC), intravascular haemolysis, acute tubular necrosis (ATN) and cardiac arrest.

## Case report

This care report describes a 33 year old para 1 mother with a monochorionic-diamniotic pregnancy notable for twin-twin transfusion syndrome successfully treated by lazer therapy at King's College Hospital, London. At 28/40 there was a premature rupture of membranes treated with steroids and antibiotics in the community. At 32/40 the mother presented with severe abdominal pain and rigors. Chorioamnionitis was suspected and confirmed by frank pus found in the placenta during a category one caesarean section completed under spinal anaesthetic. The time from first telephone contact to delivery of the second twin was 2 hours and 34 minutes. Unfortunately, both neonates died shortly after delivery from sepsis with their parents present in the special care baby unit.

The mother initially remained stable postoperatively. Preliminary blood cultures revealed clostridium perfringens infection and antimicrobials were initiated with advice from microbiology. Repeat blood tests demonstrated marked anaemia despite minimal blood loss. Intravascular haemolysis was suspected and later confirmed on blood films – it was noted by the Haematology team that this was typically a post-mortem finding. She was pre-emptively admitted to an obstetric intensive care due to the high mortality associated with the pathogen. CT imaging of the abdomen was unable to rule out infected tissue due to the post surgical changes visible. On becoming anuric, Continuous Veno-Venous Haeomfiltration (CVVH) was initiated. This did not prevent a one minute cardiac arrest, thought to be a result of hyperkalaemia from haemolysis. Post arrest, even with cardiovascular optimisation, lactate climbed to 19.0mmol/L. Haematology discussion highlighted a serum haemoglobin (Hb) of 61 but a plasma Hb of 40 which demonstrated massive haemolysis and an estimated effective Hb of 21. The rising lactate was attributed to profound anaemia and tissue hypoxia after a return to theatre excluded residual intra-abdominal infection. Following return from theatre, the Pfannenstiel wound bled profusely. Platelets fell rapidly, coagulation was deranged and clauss fibrinogen fell to 1.8g/L. DIC was diagnosed. Regular haematology review and administration of 24 units of packed red blood cells, 10 units of fresh frozen plasma, 9 pools of platelets, and 4 units of cryopreciptate established control of the coagulopathy. Daily microbiology reviews and broad spectrum antibiotics led to resolution of the underlying infection. The early tissue hypoxia lead to ATN which subsequently required a period of intermittent haemodialysis after the initial CVVH. Our patient survived and was discharged from intensive care and subsequently the care of the renal team with an expectation to make a full recovery with an intact uterus.




## Discussion

Key points identified in departmental mortality and morbidity discussion:
1.Admission blood cultures essential for early recognition of pathogen.
2.Early surgical source control essential for mother and chances of positive fetal outcome.
3.Early escalation to critical care vital due to nature of illness. Understanding of disease process and severity ensured intensive observation and treatment when required.
4.Multiple specialty input key – daily reviews from Obstetrics, Obstetric Anaesthetics, Intensive Care Medicine, Gynaecology, General Surgery, Microbiology, Haematology and Radiology all played a huge part in a statistically unlikely recovery.
5.Free plasma Hb may result in a falsely reassuring Hb value despite minimal erythrocyte bound Hb. Rising lactate in the absence of cardiovascular instability should trigger further haematology discussion and a lower threshold for transfusion.
6.Early psychologyical support for mother and extended visiting for family essential for emotional wellbeing beyond hospital stay.

## References

1. Millard MA, McManus KA, Wispelwey B. Severe Sepsis due to Clostridium perfringens Bacteremia of Urinary Origin: A Case Report and Systematic Review. Case Rep Infect Dis. 2016:2981729