

Clinical Case Report: Severe Neonatal Jaundice due to ABO Incompatibility

Maria Helena Pimentel¹; Celeste Antão¹

¹LiveWell – Research Centre for Active Living and Wellbeing. Instituto Politécnico de Bragança, Campus de Santa Apolónia - 5300-253 Bragança, Portugal

Introduction

- A clinical situation in which foetal red blood cells **carrying different surface antigens** pass through the **placenta into the maternal circulation**. Following the initial exposure, the maternal immune system produces IgM-type antibodies. A second exposure triggers the rapid and massive production of IgG antibodies, which cross the placenta and bind to the foetus's red blood cells.
- Since the introduction of **Rh immunoglobulin (RhIG) in 1968**, the incidence has **decreased significantly** (Harmening, 2012).
- This disease can cause **foetal anaemia, erythropoiesis with hepatosplenomegaly, increased bilirubin** due to the destruction of red blood cells. In some cases, **this can be fatal**.

Case study methodology

The case study seeks an **in-depth analysis** of a single individual (or a small group), focusing on clinical, **diagnostic, therapeutic and evolutionary aspects**.

Description of Case:



A newborn at 38 weeks presents with severe jaundice, respiratory distress, and anemia (Hb 7 g/dL). Direct Coombs test confirms hemolytic anemia due to ABO incompatibility.

Cues:
• Yellow-tinted baby
• Monitor showing high bilirubin levels



Phototherapy has failed to lower bilirubin levels. To prevent bilirubin encephalopathy, an exchange transfusion is necessary.

Cues:
• Lab results showing elevated bilirubin
• Guideline chart on transfusion threshold



A sterile environment is set up. The newborn is placed under continuous cardiac and oxygen monitoring to prevent complications.

Cues:
• NICU setup: incubator, heart rate monitor, oxygen saturation display
• Sterile preparation: gloves, umbilical catheter, blood bags
• Checklist on a whiteboard with key steps



The exchange transfusion is performed slowly to avoid volume overload. 85% of the newborn's blood is replaced with donor blood to reduce bilirubin levels.

Cues:
• Umbilical catheter in place
• Blood bags
• Nurse checking heart rate, blood pressure, oxygen saturation



Post-transfusion monitoring ensures the newborn's stability. Hemoglobin and bilirubin levels are re-evaluated.

Cues:
• Medical chart showing bilirubin decrease
• Nurse checking the baby's vital signs
• Parent interaction – reassuring the family

DISCUSSION

This case is consistent with hemolytic disease of the newborn (HDN) caused by ABO incompatibility, a **common cause of early-onset jaundice**. The newborn's clinical instability was likely intensified by anemia and hyperbilirubinemia. The **exchange transfusion was timely and crucial**, both to halt hemolysis and prevent bilirubin-induced neurologic dysfunction.

CONCLUSION

This case emphasizes the **importance of early identification and prompt management** of severe hyperbilirubinemia in neonates. Exchange transfusion remains the gold standard. Early, **aggressive treatment is essential to prevent irreversible complications** such as kernicterus and to improve overall neonatal outcomes.

Keywords: Hemolytic Anemia, ABO Incompatibility, Exchange Transfusion, Clinical Case.

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