1.20 NEONATAL JAUNDICE

Introduction

Jaundice due to unconjugated hyperbilirubinemia is the most common complication of the normal newborn period and occurs to some degree in more than 80% of healthy term and late preterm newborns. Physiologic jaundice occurs in the first three to five days of age when the total serum bilirubin levels rise before subsequently declining. Transient hyperbilirubinemia does not cause morbidity but must be monitored closely and treated if appropriate, to ensure that it does not progress to severe hyperbilirubinemia and/or chronic bilirubin encephalopathy (kernicterus). Severe or prolonged hyperbilirubinemia that cannot be explained by an infant's birth and family history, blood type, breastfeeding status, and other clinical factors may require further laboratory testing and work-up. In addition, jaundice due to unconjugated hyperbilirubinemia must be distinguished from conjugated hyperbilirubinemia, when the conjugated bilirubin level is either greater than 1 mg/dL or more than 20% of the total bilirubin concentration. Pediatric hospitalists often provide consultation regarding necessity for admission as well as render inpatient care; therefore, they must be knowledgeable about the diagnosis and management of neonatal hyperbilirubinemia.

Knowledge

Pediatric hospitalists should be able to:

- Describe the physiology of bilirubin production and metabolism, including the pathophysiology that leads to hyperbilirubinemia.
- List the elements of the birth and family histories and review of systems which may aid in determining the etiology of the hyperbilirubinemia.
- Cite the physical examination findings that support a potential underlying diagnosis attending to skin, abdomen, dysmorphic features, and others.
- Discuss the risk factors for severe unconjugated hyperbilirubinemia, including lower gestational age, isoimmune hemolytic disease, and exclusive breastfeeding.
- Describe indications for inpatient admission for the management of hyperbilirubinemia.
- Compare and contrast the pathophysiology and epidemiology of breast milk jaundice versus breastfeeding jaundice.
- Describe the differential diagnosis of prolonged unconjugated hyperbilirubinemia.
- Discuss the risk factors for bilirubin neurotoxicity, such as prematurity, isoimmune hemolytic disease, and sepsis.
- Review the pathophysiology involved in the development of kernicterus.
- Compare and contrast the features that distinguish unconjugated hyperbilirubinemia from conjugated hyperbilirubinemia.
- Describe the differential diagnosis of conjugated hyperbilirubinemia.
- Describe the syndrome of bilirubin-induced neurologic dysfunction (BIND).
- Review the approach toward diagnosis, including commonly performed laboratory tests.
- Describe the use of diagnostic imaging in evaluating conjugated hyperbilirubinemia.
- Explain the current national recommendations and evidence-based standards for the management of hyperbilirubinemia in the newborn.

Skills

Pediatric hospitalists should be able to:

- Obtain accurate, relevant information from the newborn and maternal histories, such as prenatal laboratory results, maternal and infant blood types, delivery information, feeding history, and others.
- Perform a comprehensive exam, identifying jaundice and eliciting findings to support potential underlying diagnoses.
- Identify symptoms of bilirubin encephalopathy, such as poor feeding, lethargy, irritability, hypertonia, seizures, and others.
- Order and interpret bilirubin results in a timely manner based on risk factors for developing severe hyperbilirubinemia.
- Order and interpret other studies as needed to diagnose associated underlying conditions.
- Provide support and advice for breastfeeding mothers in order to optimize breastfeeding and enable understanding when it is medically necessary to start supplementation with expressed breast milk or formula.
- Recognize indications for initiating, continuing, and discontinuing phototherapy and/or exchange transfusion based on risk factors for bilirubin neurotoxicity.
- Avoid routine intravenous fluids during phototherapy, unless there are concerns about inadequate oral intake or severe dehydration.
- Obtain appropriate consultative services for infants with conjugated hyperbilirubinemia or unexplained severe or prolonged unconjugated hyperbilirubinemia who may need further evaluation.
- Identify neonates requiring a higher level of care and efficiently coordinate transfer.
- Perform careful reassessments daily and as needed, note changes in clinical status, and respond with appropriate actions.
- Create a discharge plan that includes comprehensive handoff communication and addresses specific outpatient follow-up needs, such as weight checks, repeat laboratory testing, and others as appropriate.

Attitudes

Pediatric hospitalists should be able to:

- Appreciate the impact of successful breastfeeding on the primary prevention of neonatal hyperbilirubinemia.
- Realize responsibility for educating the family/caregivers and other professional staff regarding the risks, evaluation, and therapies available for hyperbilirubinemia.
- Acknowledge the importance of coordinating discharge plans with the primary care provider and home care agencies as appropriate.

Systems Organization and Improvement

In order to improve efficiency and quality within their organizations, pediatric hospitalists should:

- Lead, coordinate, or participate in the development and implementation of policies and procedures that promote the successful initiation and continuation of breastfeeding for newborns.
- Lead, coordinate, or participate in the development and implementation of cost-effective, safe, evidence-based care pathways to standardize the evaluation and management of hospitalized neonates with hyperbilirubinemia.
- Lead, coordinate, or participate in education programs for the family/caregivers and the community to increase awareness of evidence-based guidelines and strategies to reduce admission rates.

References

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3. Mitra DS, Rennie DJ. Neonatal jaundice: aetiology, diagnosis and treatment. *Br J Hosp Med.* 2017;78(12):699-704. https://doi.org/10.12968/hmed.2017.78.12.699.