IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES
ISSN PRINT 2319 1775 Online 2320 7876

 UGC CARE Listed (Group -I) Journal Volume 11, Iss 12,Dec 2022

The Pediatric Surgical Approach to Treating a Newborn with Suspected Intestinal Obstruction

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ABSTRACT
This article reviews the potential hazards to watch out for while examining a newborn with intestinal blockage and suggests a diagnostic algorithm. The discovery of a child who is otherwise healthy in the majority of surgical problems and the fact that many symptoms are modest are among the challenges. Correct radiographic interpretation is essential for making the diagnosis of distal intestinal blockage. The neonatologist and pediatric surgeon face a diagnostic difficulty when a newborn presents with symptoms of intestinal blockage. Nevertheless, a correct and prompt diagnosis will be possible in some cases with the help of a methodical interpretation of the history, physical examination, radiograph, and contrast imaging.

Keywords: Atresia, Intestinal obstruction, Malrotation, Midgut volvulus, Neonatal

1. INTRODUCTION

Abdominal distension, bilious vomiting, and a delay in or absence of meconium passing are the four basic symptoms of newborn intestinal blockage. When a newborn has suspected intestinal obstruction or abdominal distension, the following are the key concerns of a pediatrician or neonatologist: Pathological or physiological? Are there any medical or surgical causes? What might the child's warning indicators be? How should the youngster be assessed? What conclusion should be drawn from the investigations? What calls for a prompt surgical referral?
The following pattern can be useful in evaluating and assessing the child. The clinical presentation (antenatal and postnatal), differential diagnosis (medical and surgical), radiological interpretation, and diagnostic algorithm in newborn intestinal obstruction have all been attempted to be analyzed in this review study.

IJFANS International Journal of Food And Nutritional Sciences
Official Publication of International Association of Food and Nutrition Scientists

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 12,Dec 2022

The review was based on a review of recent literature as well as the clinical records analysis of all patients with newborn blockage. The analysis is carried out in accordance with the ensuing factors: study of the history, physical examination, differential diagnosis, which includes both medical and surgical diagnoses, evaluation of the neonate, radiological interpretation, and typical clinical scenarios.

Analysis of History

The following elements should be taken into account while analyzing the child's medical history, including the timing and progression of symptoms (early abdominal distension suggests a distal blockage while bilious vomiting suggests a proximal obstruction). Blood in the stools [can occur in neonatal necrotizing enterocolitis (NNEC) or advanced marotation of gut with midgut volvulus (MGV)]; antenatal history of polyhydramnios- in congenital gut obstruction like duodenal or jejunal atresia; maternal hypothyroidism (a very common medical cause of intestinal obstruction in neonate); or diabetes mellitus. [1,2]

Physical Examination

A neonate with neonatal intestinal obstruction should have their physical examined for the following things: general activity and cry assessment; vomitus or nasogastric tube aspirate type; presence of any postnatal complications (predisposing to NNEC or sepsis); abdominal examination for dilated veins, abdominal wall erythema, shiny or tense abdominal wall; hernial orifices and genitalia; anal orifice assessment; gentle per rectal.

In cases of proximal bowel blockage, such as malrotation of the gut with MGV, duodenal stenosis, or proximal atresia, there will be little to no abdominal distension or any abdominal symptom. [3] In MGV, fast deterioration is possible when there is severe intestinal ischemia. If there is a strong suspicion of intestinal obstruction, take an abdominal X-ray from the neck to the knees. In the majority of instances, a correct radiograph is diagnostic; evaluation of the gas pattern on an AXR aids in diagnosis.

Unless proven otherwise, any bilious emesis in a newborn or infant who has previously been healthy is assumed to have malrotation of the intestines with MGV. Congenital intestinal obstruction may be present based on antenatal sonographic findings of polyhydramnios. [4]

For lower GI obstruction [ileal atresia/meconium ileus/disease Hirschsprung's (HD)], contrast enema is sometimes performed rather than an upper GI contrast study (duodenal stenosis or MGV). [4,5]

Assessment of the Neonate

The child's general health and activity level provide a hint as to a potential medical or surgical cause. By properly interpreting the patient's history, the doctor must rule out common benign explanations including improper feeding and burping as well as maternal drug-induced ileus.

Associated "red flag" symptoms like bilious vomiting or blood in the stools must be watched out for. Systemic consequences from NNEC or other medical causes, such as dyselectrolytemia, circulatory failure, or DIC, are more frequent. [6,7] If there is a strong suspicion of intestinal obstruction, have an X-ray of the abdomen done from neck to knees.

In the majority of cases, a correct radiograph is diagnostic, and evaluating the gas pattern on an AXR helps with the diagnosis. Unless proven otherwise, any bilious emesis in a newborn or infant who has previously been healthy is assumed to have malrotation of the intestines with MGV.

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Congenital intestinal obstruction is suggested by the prenatal sonological finding of polyhydramnios. Contrast enema is used for lower gastrointestinal blockage (ileal atresia/meconium ileus/HD) while upper gastrointestinal contrast study is reserved for partial upper GI obstruction (duodenal stenosis or MGV).

Interpreting the plain X-ray in Intestinal obstruction of neonate

The presence of any dilated loops is determined and the gas pattern is evaluated to see if it is uniform or if there is a lack of distal gas (which suggests obstruction). In an erect film, air-fluid levels point to a considerable barrier. An upright film verifies the diagnosis of blockage, while a supine film provides a hint regarding the severity of the obstruction. The level of gas present in a supine film indicates the degree of blockage.

Pneumatosis intestinalis and portal venous gas are frequent observations in NNEC. Serial radiographs with a fixed loop indication point to NNEC, Meconium peritonitis is characterized by calcification, meconium ileus by the soap bubble sign, and complicated intestinal obstruction with perforation (NNEC/HD, atresia, or meconium ileus) by pneumoperitoneum. [7,8]

The absence of ossification centers in the knee may indicate hypothyroidism. There won't typically be a single dilated loop, scarcity of distal gas, uniform dilated loops, high air-fluid levels, or pneumoperitoneum in non-surgical reasons like sepsis.

2. DISCUSSION

A thorough physical examination, a complete history, and good radiological interpretation are all necessary in the evaluation of a newborn with suspected intestinal blockage in order to make an accurate and timely diagnosis.

While disorders like duodenal atresia and ileal atresia are generally easy to diagnose, conditions like malrotation of the gut (with MGV) and HD require a more thorough evaluation. It's also important to rule out medical conditions like hypothyroidism and septicemia. A rapid and accurate diagnosis would be made possible by using a methodical, step-by-step approach to diagnosis and taking into account all potential outcomes.

3. CONCLUSION

The neonatologist and pediatric surgeon face a diagnostic difficulty when a newborn presents with symptoms of intestinal blockage. Nevertheless, a correct and prompt diagnosis will be possible in some cases with the help of a methodical interpretation of the history, physical examination, radiograph, and contrast imaging.

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