Journal Club

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Source: Norsa L, Goulet O, Alberti D. Nutrition and intestinal rehabilitation of children with short bowel syndrome: a position paper of the ESPGHAN committee on nutrition. Part 1: from intestinal resection to home discharge. J Pediatr Gastroenterol Nutr 2023;77(2):281–297. DOI: 10.1097/MPG.0000000000003849

Short bowel syndrome (SBS) is one of the leading causes of intestinal failure (IF) in children, and the mainstay of treatment remains parenteral nutrition (PN). It is defined as the reduction in the function of the gut due to any natural loss or surgical resection, which results in a decline in its function below the minimum needed to absorb nutrients and fluids, which is sufficient for adequate growth in children for a minimum of 60 days within a 74 consecutive day interval. The aim of this position paper is to provide evidence-based practical guidance for the management of SBS to clinicians. SBS is classified as—type 1 with end enterostomy or enterorectal anastomosis with absence of the colon, type 2 with jejunocolic anastomosis, and type 3 with jejunoileocolic anastomosis preserving the ileocecal valve (ICV) and the colon. The prognosis depends on the diagnosis, type of SBS, associated motility disorder, number of surgical procedures done, and age of the patient. The management depends on the stage of the surgery:

- Early acute phase: This includes the pre and immediate postoperative period. In the perioperative period, fluid resuscitation is very crucial. Tissue perfusion should be maintained in order to avoid hypo/hypervolemia, electrolyte imbalance, and glucose irregularity. In the immediate postoperative period, nutritional support should be established to attain the normal physiological state, and glucose infusion can be started initially while maintaining the normal blood sugar levels (infusion rate: 3.5–7 mg/kg/minute) and withholding the PN at this early stage.
- Intermediate postoperative phase (48 hours–7 days): This phase begins with the passage of stool. Children are prone to hyponatremia and dehydration at this stage. So, hydration status (including weight) along with plasma and urinary sodium (>20 mmol/L) should be monitored daily, and losses should be compensated by parenteral sodium-containing fluids. Nutritional support can be started initially with 60 and 80 kcal/kg/day for preterms and 45–70 kcal/kg/day for term babies. Protein intake should be 1.3–1.5 gm/kg/day. If enteral nutrition is not feasible or effective, PN should be given with intravenous lipid emulsions, which should be composite containing fish oil.
- Late postoperative phase: After the resolution of initial inflammation, nutrition can be increased to 90–120 kcal/kg/day for preterm and 75–85 kcal/kg/day for term babies. The nutrient should be used in the upper range of recommendation to compensate for deficits, promote tissue repair, and catch-up growth. PN should be started as soon as possible.

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The group advocates the initiation of oral or enteral feeding as soon as possible and preferably within 48 hours of surgery. Early feeding has many advantages as follows—rise in plasma levels of various gastrointestinal (GI) hormones, stimulates neuromuscular function throughout and oral motor development, releases epidermal growth factor from salivary glands and increases GI secretion of trophic factors, prevents long-term feeding aversion and promotes tolerance, and supports intestinal growth and adaptation along with improvement in energy and micronutrients supply.

The type of food will depend on the age of the child, the etiology, and the type of SBS. For infants, human milk (mother's or donor's) is recommended. If human milk is not available, then various polymeric formulas, extensive hydrolyzed formulas, or amino acid-based formulas can be used. Clinically stable children who would require PN for >12 weeks should be considered for discharge on home PN after appropriate training of the caregivers.

Source: Smayra K, Miangul S, Yap N, et al. Technical success, sample adequacy, and complications of pediatric transjugular liver biopsy: a systematic review and meta-analysis. Dig Dis Sci 2023. DOI: 10.1007/s10620-023-08071-4

The role of liver biopsy is paramount in the diagnosis of liver diseases. An adequate sample size with minimal complications aids in the management of the disease. Percutaneous liver biopsy is the standard method, but it can lead to hemorrhagic complications if there are coagulopathy, thrombocytopenia, or ascites. In transjugular liver biopsy (TJLB), liver tissue is obtained by puncturing the internal jugular veins *via* the hepatic veins. It can also measure hepatic venous pressure gradient simultaneously. The limitation of this method is that the sample size is smaller and fragmented. Also, in pediatric population, technical difficulties are faced due to the smaller size of the livers

and horizontal hepatic veins, which may have an increased risk of capsular perforation. This meta-analysis was done to evaluate the safety and efficacy of TJLB in pediatric patients by assessing the rate of technical success, biopsy adequacy, and complications. Eight retrospective studies with a total of 361 children aged 56–176 months (reported in four studies) were analyzed. These children were having ascites (*N* = 89, 24.65%), portal hypertension (*N* = 27, 7.46%), biliary atresia (*N* = 36, 9.94%), autoimmune hepatitis (*N* = 9, 2.49%), fulminant hepatitis (*N* = 54, 14.91%), liver cirrhosis (*N* = 3, 0.83%), Wilson disease (*N* = 9, 2.49%), graft rejection (*N* = 13, 3.59%), acute/subacute liver failure (*N* = 13, 3.59%), chronic liver disease (*N* = 93, 25.69%), and 105 (29%) had other diagnoses. Mean weight of the children was 40.46 ± 13.76 kg with a mean INR of 1.81 ± 0.67 and a mean platelet count of 88,621.74 ± 82,970.63 cells/mm^3. The procedure was done under anesthesia [general anesthesia *N* = 189, (52.35%) and local anesthesia = 102 (28.25%)] or intravenous sedation [*N* = 27, (7.47%)]. A total of 374 tissue biopsies were performed. The needle used was 18/19-gauge quick core needles. The procedures were performed under ultrasound guidance, fluoroscopic guidance, and transabdominal ultrasonography in one child. The success of the procedure was defined by procurement of an adequate sample with adequate number of portal tracts and total length of 14.65 ± 5.54 mm. The pooled rate of histopathological adequacy of tissue samples was evaluated to be 97.5% in TJB. The technical success rate from a total of 374 biopsies was 99.1%, with median number of passes being 2±. Only three failures were reported due to technical difficulties. With the help of TJB, 19 new diagnoses were established, while 150 were confirmed in these children. A total of 49 complications were reported, which were direct results of the liver biopsy. Most common complications were minor bleeding from the entry site (38.78%), pyrexia lasting for <24 hours (12.24%), need for blood transfusion (10.2%), supraventricular tachycardia (8.16%), analgesic requirement (8.16%), and one death. According to this meta-analysis, TJLB exhibited high rates of technical success with adequate histopathological sample and low postprocedural complication rates.

Source: Goyal NP, Mencin A, Newton K, et al. An open label, randomized, multicenter study of elafibranor in children with nonalcoholic steatohepatitis. J Pediatr Gastroenterol Nutr 2023;77(2):160–165. DOI: 10.1097/MPG.0000000000003796

Nonalcoholic fatty liver disease (NAFLD) is emerging as the most prevalent chronic liver disorder, with a global prevalence of 25%. It progresses from steatosis with or without mild inflammation (NAFL) to necroinflammation and fibrosis (nonalcoholic steatohepatitis). There is currently no approved therapy for NAFLD; a healthy lifestyle and weight reduction remain the only resort so far. Elafibranor is a peroxisome proliferator-activated receptors (PPAR) agonist. PPARs are a group of drugs that are important for glucose and lipid metabolism. Elafibranor helps in NAFLD by its effect on glucose metabolism and insulin resistance. The aims of this multicentric study were to describe pharmacokinetics, safety, and tolerability of oral elafibranor at two different doses (80 and 120 mg) in children 8–17 years and assess changes in aminotransferases. A total of 10 boys (mean age: 15.1 years) with nonalcoholic steatohepatitis (NASH) were involved. Half were given elafibranor at a dose of 80 mg, and the rest were given 120 mg. The mean baseline alanine aminotransferase (ALT) was 82 and 87 U/L in the 80 and 120 mg groups, respectively. Elafibranor was rapidly absorbed and well-tolerated. At the end of 12 weeks, mean ALT was 52 U/L in the 120 mg group, with a relative mean ALT change from baseline of –37.4%. Not much improvement was observed in the 80 mg group. Both the groups tolerated it well. Decreasing ALT may lead to improvement in the histology as well.

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