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What is parenteral nutrition?

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This blog will discuss what parenteral nutrition is, when it is used in the context of intestinal failure, and the risks associated with this therapy.

Parenteral nutrition (PN) is a therapy that delivers elemental nutrients to a patient via intravenous infusion (directly into the blood vessels), in contracts to enteral nutrition which refers to the intake of nutrients via the gastrointestinal tract. The PN formulation typically contains sugars, lipids, amino acids, vitamins, and minerals which is administered to a patient to sustain life and their nutritional requirements.[1] However, PN can also be administered to supplement another form of nutrition (enteral or oral nutrition) to ensure that the patient is fulfilling their complete nutrition needs[1]. If PN is used as a complete source of nutrition, then the patient is nil by mouth and this is known as Total Parenteral Nutrition (TPN).[1] If PN is supplementary, then the patient will be on enteral feeds or oral food depending on their condition and their ability to consume food orally.[1]

When a catastrophic abdominal complication arises, such as an entero-atmospheric fistula or a high output enterostomy, one of the therapies that is started to stabilise the patient is PN.[2] This provides immediate nutrition to allow the patient to start increasing their nutritional reserves to recover. Within the stabilisation period, the patient will be assessed for their level of intestinal function and long term capability to maintain this without medical intervention. Intestinal failure is divided into three categories[2]:

1. Type 1 – This type is classed as self-limiting and is an acute need for PN due to post-operative ileus or acute inflammation

2. Type 2 – This type is a prolonged requirement (more than 20 days) for PN where the patient has a GI complication such as an enterocutaneous fistula or abdominal sepsis

3. Type 3 – This type requires long term PN. The patient has a short gut, chronic obstruction, or a motility disorder that means a patient will be unable to maintain adequate nutrition for growth without the support from PN.

The PN requirement for patients that have Type 2 intestinal failure is immediate and generally lasts until restorative surgery can be completed.2 Due to the nature of the disease process and the restorative conclusion for the patients, the time to restorative surgery can range between four to ten months. The InsidesTM System is a therapeutic chyme reinfusion solution that is clinically indicated for type 2 intestinal failure patients that have the intestinal anatomy required to use the medical device.

The benefits of PN outweigh the risks associated with the therapy for stabilisation and life preservation, but the long-term use of PN potentiates the risk of complications arising.[2] The risks and possible complications of PN are blood stream bacteraemia's from intravenous catheters used to administer PN causing sepsis, hepatic and gastrointestinal disorders and gut dysmotility.[1,2] The incidence of catheter-related bloodstream infections (CRBSI) in intestinal failure patients is estimated at 1.43 per 1000 catheter days.[1]

There is substantial evidence supporting chyme reinfusion as the preferred therapy for preparing type 2 IF patients for restorative surgery long term.[1,2] Also, it is recommended by both ESPEN and ASPEN.[2] Chyme reinfusion negates the many risks associated with long term use of PN and provides better patient outcomes. The Insides™ System is the medical device that provides the means to deliver this evidenced based therapy that can be administered at home.

References

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2. Pironi, L., Arends, J., Bozzetti, F. et al. (2016). ESPEN guidelines on chronic intestinal failure in adults. Clinical Nutrition, 35, 247 – 307. http://dx.doi.org/10.1016/j.clnu.2016.01.020