

'My Practice'

Post-pyloric feeding in gastroparesis: the role of high protein enteral feeds

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Background

Ashley*, a 24 year old female, was admitted to hospital with a 2-year history of intermittent nausea, vomiting and constipation. She had recently been diagnosed with gastroparesis and, prior to the onset of her gastrointestinal symptoms 2 years ago, Ashley had been fit and well – she had no significant medical history and did not smoke or drink alcohol. She worked as a carer for children with learning disabilities and lived with her boyfriend and his grandparents. During her first admission, the gastroenterology consultant assessed Ashley and recommended a gastric pacemaker. While she waited for funding, Ashley was managed with a proton-pump inhibitor, anti-emetic, antispasmodic and laxatives. Despite this, her gastrointestinal symptoms persisted, leading to insufficient oral intake. Nasojejunal (NJ) feeding was indicated to provide supplementary nutrition to meet her requirements whilst bypassing the parietic stomach. She was referred to a dietitian to conduct a full nutritional assessment and initiate her enteral feeding regimen.

Initial Assessment

Ashley's weight on admission was 53kg (BMI 19.5kg/m²). Despite longstanding, intermittent gastrointestinal symptoms she denied any weight loss. The dietitian estimated Ashley's nutritional requirements to be 1580kcal (including 25% activity factor), 70g protein (1.3g/kg/day) and 160ml (30ml/kg/day)¹. She usually managed 1 small meal a day (often a chicken salad) but on a "good day" she would have a small portion of fish or chicken with rice. She also snacked on crisps, chocolate and biscuits, which provided additional energy intake but nominal protein. Consequently, the dietitian felt a high protein feed was indicated to help Ashley fully meet

her nutritional requirements.

Dietetic Management

Following her initial assessment, Ashley received 1000ml Nutrison Protein Plus at 50ml/hour and a 30ml bolus of Calogen Extra (1400kcal, 63g protein) via her NJ tube, to supplement her light oral intake. Ashley received this feed over 20 hours and drink well so her fluid goal was easily met. After several days of supplementary NJ feeding in hospital, Ashley was reportedly brighter and more energetic. Bolus feeding was considered in preparation for discharge as Ashley and the dietitian felt this would suit her lifestyle and daily routine better once back at home. However, Ashley vomited after receiving a bolus feed and declined trying again, resuming her continuous pump regimen instead. Soon after, Ashley was trained by the ward nurses on home tube care and discharged. Her care was transferred to the home enteral feeding (HEF) team.

Community Review

Ten days after discharge, Ashley received her first HEF team review. She had typically been taking 1000ml Nutrison Protein Plus per day at 85ml/hour but her NJ tube had blocked 2 days before the review and remained blocked at assessment, so she had received little enteral nutrition during this time. Ashley had also discontinued Calogen Extra on discharge as she felt nauseous after boluses. Her appetite remained poor, having eaten only a small piece of chocolate and a small chicken salad over the past 3 days. Occasionally Ashley had also managed to drink 200ml Fortisip Bottle during the day which had been prescribed by her GP prior to hospital admission.

Despite generally poor dietary intake and a blocked NJ tube, Ashley's

weight had increased slightly since her hospital admission to 54kg (BMI 19.8kg/m²) and she was happy to try and maintain this. Her bowels were opening every other day, however she reported that she required Peristeen® irrigation to initiate bowel evacuation very time, otherwise she suffered from bleeding and pain.

The dietitian felt that Ashley may benefit from a fibre-containing feed to help relieve her constipation. After arranging for replacement of Ashley's blocked NJ tube, the dietitian changed Ashley's feeding regimen to 1000ml Nutrison Protein Plus Multi Fibre running at the rate Ashley reported she had best tolerated (50ml/hour), providing 120kcal, 63g protein and 15g fibre per day in addition to light meals and snacks. Ashley tolerated the change to Nutrison Protein Plus Multi Fibre well with occasional cramping, which was not unusual in Ashley's condition, and bowels opening more frequently.

Ongoing Management

In the following month, Ashley experienced re-occurrence of her gastrointestinal symptoms, including constipation, nausea and vomiting. To try and alleviate these, she reduced her NJ feeding rate to 30ml/hour, which meant continuously feeding for 24 hours a day to meet her prescribed volume. The volume of feed she managed each day fluctuated depending on the severity of her symptoms, and she was managing just a small amount of snacks. This meant Ashley was often not meeting her nutritional requirements, particularly for protein, as her snacks were relatively low in protein. Ashley's weight had

Calogen Extra is a Food for Special Medical Purposes for the dietary management of conditions requiring a high energy intake and must be used under medical supervision.

Nutrison Protein Plus, Nutrison Protein Plus Multi Fibre and Fortisip Bottle are Foods for Special Medical Purposes for the dietary management of disease related malnutrition and must be used under medical supervision.

slightly declined to her admission weight (53kg, BMI 19.5kg/m²) and it was important to prevent further declines in her nutritional status and preserve her lean muscle mass.

In addition, Ashley reported that continuously feeding from a 1000ml pack was uncomfortable, as she had returned to work and carried the feed in a backpack during her working day. Decanting the feed into smaller volumes would have been laborious and limited by 4-hour maximum hanging times, so this was not a feasible option.

As such, a feed with a higher protein content was indicated in order to help Ashley meet her protein requirements more consistently each day, preferably in a presentation better suited to Ashley's busy lifestyle. The dietitian discussed the introduction of Nutrison Advanced Protison with Ashley to replace her current feed, as this would provide increased protein whilst maintaining her energy and fibre intake. In addition, the 500ml pack presentation of Nutrison Advanced Protison was well suited to Ashley's routine, allowing for easier mobile feeding. Ashley was very keen to give this a try. Following a week's trial, Ashley reported that she tolerated Nutrison Advanced Protison well and her regimen was therefore changed to 2 x 500ml packs of Nutrison Advanced Protison each day at 50ml/hour, providing 1280kcal, 75g protein, 15g fibre.

Outcomes

One year after her initial NJ tube insertion and 7 months since changing to Nutrison Advanced Protison, Ashley reported feeling generally well. She reported finding the 500ml packs very convenient and her enteral feed intake seemed to have improved over the last 6 months. Her weight had gradually improved and remained stable at 55kg (BMI 20.2kg/m²). Ashley had not suffered from any vomiting since changing to Nutrison Advanced Protison and, even though her stools remained type 1-22, she no longer required bowel irrigation. Ashley's NJ tube was recently replaced with a low profile gastro-jejunal feeding tube as a more suitable long-term feeding route, whilst she waited to receive funding for a gastric pacemaker.

Discussion

Gastroparesis is a chronic symptomatic disorder of the stomach

characterised by delayed gastric emptying with out evidence of mechanical obstruction³. It makes up approximately 5% of this Trust's HEF team adult caseload. Most of these are young women, which is consistent with research findings of a threefold higher prevalence in women than men³. Symptoms can include nausea, vomiting, early satiety, postprandial fullness, and upper abdominal pain³. Gastroparesis has been found to be associated with significant psychological distress and poor quality of life and therefore symptom management should be a key consideration in dietetic intervention⁴. The three main causes of gastroparesis are diabetes post-surgery, and idiopathy³. In this Trust's caseload the most common cause is typically the latter, and this appeared to be the case for Ashley.

Post-pyloric feeding such as via naso-jejunal or gastro-jejunal feeding tubes is often indicated in the presence of poor nutritional intake and gastroparesis. Continuous pump feeding is commonly used as post-pyloric bolus feeding is not often tolerated⁵. However, poor tolerance to high feeding rates can make continuous pump feeding over long periods of time impractical and disruptive. These considerations should be kept in mind when determining an appropriate feeding regimen for a gastroparesis patient, which is likely to be long term. An MDT approach is essential to ensure these patients receive optimal intake of nutrition and symptom management through a combination of medication and post-pyloric feeding.

Many gastroparesis patients on our caseload require ongoing support and rarely tolerate weaning from their feeding tubes. Despite receiving medications to manage her gastrointestinal symptoms, Ashley continued to experience pain when eating and therefore relied on post-pyloric tube feeding for most of her nutrition.

Protein: The aim of nutritional support in gastroparesis should be to optimise nutritional intakes with a view to meeting nutritional requirements. The clinical complexities of gastroparesis patients can lead to challenges in achieving this, even with supplementary enteral feeding. In Ashley's case, her poor tolerance to bolus feeds, fast feeding rates and large volumes meant that

she frequently received inadequate amounts of her prescribed feed. Her oral snack intake of chocolate, crisps and biscuits provided enough energy to prevent significant weight loss at this time, but were a poor source of protein and micronutrients. It was therefore important to consider the use of a nutritionally complete, high protein feed providing 24% of its total energy content from protein to optimize her intake, even when she struggled to manage full feed volumes. High protein medical nutrition has been shown to help achieve improved clinical, financial, and nutritional outcomes as well as improvements in anthropometric measurements, including handgrip strength, suggesting functional improvements for patients as well⁶.

Conclusion

Ashley's case illustrates how post-pyloric tube feeding with high protein enteral feeds can help correct nutritional deficit to maintain a healthy weight and support symptom management. Ashley was able to go back to work without worrying about eating to maintain her weight, and has been happier since her vomiting ceased and bowel output improved. Jejunal feeding with Nutrison Advanced Protison helped Ashley regain control over her gastric symptoms and nutrition, and may be useful in similar cases where enteral feed volumes and protein requirements are not consistently met.

*Fictitious name

References

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Nutrison Advanced Protison is a Food for Special Medical Purposes for the dietary management of disease related malnutrition in metabolically stressed patients and must be used under medical supervision.