

The Use of a Liquid High Protein Supplement in a Patient with Pressure Ulcers

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Following a spinal cord injury (SCI) pressure ulcers are common – possibly due to a range of factors, such as inadequate diet, vitamin and mineral deficiencies and/or faulty equipment or care.¹ In practice, these contributory factors can complicate the rehabilitation process, prolong hospitalisation and affect the mental health of the SCI patient.

This case study discusses a patient who was admitted from a London hospital for surgical management of grade 4 pressure ulcers to the National Spinal Injuries Centre (NSIC) at Stoke Mandeville Hospital, which is part of Buckinghamshire Healthcare Trust. The case study details the benefit of using a liquid high protein supplement containing 15 g protein in 30 mls dose.

Background

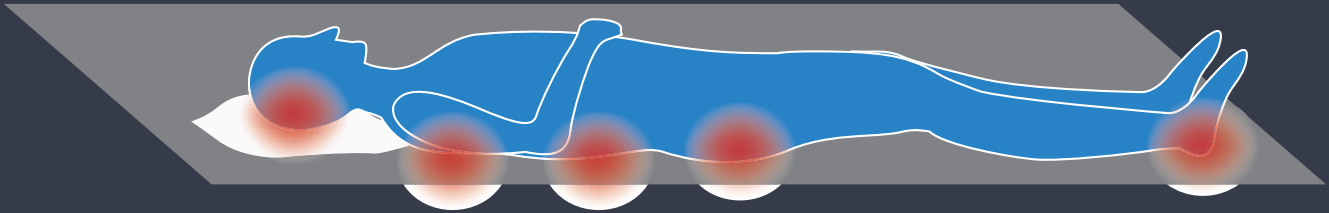
A 61-year-old male patient – Mr X* – was admitted to one of the surgical wards at NSIC for elective surgery to manage two pressure ulcers – one which was a grade 4 sacral sore and one which was a grade 2 ischial sore. Mr X suffered a spinal injury 29 years ago secondary to a road traffic accident – Lumbar 1 (L1) spinal injury, America Impairment Scale (AIS) A, signifying a complete loss of neurological function below the level of injury. His medical history included hypertension, hypothyroidism, a colostomy for the last four years, incisional hernia at the colostomy site and high cholesterol.

Interventions

One week after his admission, Mr X was referred to the dietitians for nutrition support with pressure ulcers management.

The initial assessment with Mr X revealed:

- Weight = 89.5 kgs; height = 1.87 m; body mass index (BMI) = 25.6 kg/m²
- Blood values are shown in **Table 1**.
- Mr X was receiving an intravenous (IV) antibiotic via a peripherally inserted central catheter (PICC) line prior to his surgery. He was also started on a vacuum-assisted closure (VAC) pump and sand bed. No multivitamins were prescribed at this time.



D. The aim of nutrition support for Mr X was to optimise his nutritional status before surgery. A detailed diet history taken showed he was managing to get 1614 kcals and 69 g protein on an average day. His nutritional requirements were calculated to be 2100-2600 kcals + 135-180 g protein (average 150 g) + 2700 mls fluids per day.² That meant that Mr X was at a deficit of at least 600 kcals and 80 g protein. This information was given to Mr X and a plan agreed to meet the deficit of protein using a liquid high protein supplement (provided 15 g protein per 30 mls) four times a day (QDS) – i.e. providing 60 g protein through this supplement alone. The suggestion was made to take the supplement like a syrup as it is, or diluted with water or squash. Specific advice to avoid it with hot drinks was given. It was also advised that Mr X should take meals from the hospital menu with increased protein (20 g or above per meal) for at least 4-5 times a week. This information was provided to the patient. Mr X was very compliant with the high protein supplement as he was motivated to get better for his holiday planned in June.

Mr X was operated at 2.5 weeks from admission and 1.5 weeks from commencing nutrition support. He remained on bed rest for a total of 65 days and started mobilising slowly after that.

He was continued on the high protein liquid supplement twice daily (BD) after the operation to facilitate wound healing post-operatively. This was stopped completely when rehabilitation was started. Mr X continued on a high protein diet whilst an inpatient.

Mr X's total length of stay was 76 days, compared to a generally observed range of 90-180 days on average. His albumin on admission was 31, which increased to 35 just prior to his surgery in 1.5 weeks. Unfortunately, the other electrolytes were not tested as regularly. Whilst an inpatient it was ensured that he had the required supply of the high protein supplement so that treatment and nutrition support were not disrupted. Alongside this, Mr X was reviewed regularly every week, queries answered, barriers overcome and positive praise provided for progressing and being compliant. His progress was very visible to us and to him and that motivated him to stick to the dietetic plan. He did have a week of bed rest again due to skin being vulnerable when he commenced rehabilitation, but he was again started on the high protein supplement for a week which provided a much-needed boost.

Mr X was discharged at the start of June 2018 (76 days post admission) right in time for his holidays.

* Patient name changed to protect confidentiality

Discussion

Nutrition support undoubtedly remains a very crucial pillar of pressure sore management alongside other interventions. The effect of using the high protein supplement and meeting energy and protein requirements ensured better outcomes in terms of reduced length of stay and biochemical markers. This can be relatively easier to achieve when motivating and incentivising the patient through behavioural change techniques to ensure compliance with the dietetic supplements/plan.

Learning point

A major learning point from this study would be to monitor electrolytes more regularly and possibly conduct a robust comparative study between patients with and without high protein supplementation.

Table 1: Blood Values

Sodium	136 mmol/L
Potassium	4.2 mmol/L
Urea	4.7 mmol/L
Creatinine	50 umol/L
eGFR	>90 mL/m/1.73m
Corrected calcium	2.43 mmol/L
Inorganic phosphate	1.40 mmol/L
Total protein	69 g/L
Albumin	31 g/L
Alanine transferase	23 U/L
Alkaline phosphatase	89 U/L
Total bilirubin	4 umol/L
C reactive protein	28 mg/L
Haemoglobin	105 g/L
Thyroid stimulating hormone	2.59 mIU/L

References: **1.** Bryne DW, Salzberg CA (1996). Major risk factors for pressure ulcers in the spinal cord disabled: a literature review. *Spinal Cord*; 34(5): 225-263. **2.** Consortium for Spinal Cord Medicine (2014). *Pressure Ulcer Prevention and Treatment Following Injury: A Clinical Practice Guideline for Health-Care Providers*, Second edition; ISBN 0-929819-24-1.