Brief Report

Case report on a multidisciplinary approach to address malnutrition and improve a patient's fitness for treatment

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Abstract

Approximately 5,700 people are diagnosed with myeloma each year in the UK. The standard of care is to receive an autologous stem cell transplant after completion of induction therapy. There are no specific dietary recommendations for people with myeloma, however they are at risk of malnutrition due to symptoms and side effects of treatments. This report describes the journey of a 73-year-old male diagnosed with immunoglobulin A (IgA) lambda myeloma in April 2021. The patient lost 23% of his body weight during 6 months of systemic anti-cancer treatment (SACT), resulting in postponing his transplant twice due to reduced fitness. This report describes an effective, although late, multidisciplinary intervention which was successful for the patient who managed to re-establish a healthy weight and good quality of life. The patient received his transplant in January 2023. This case highlights two important aspects of patient care that should not be underestimated in dietetic clinical practice: early screening and multidisciplinary collaboration. Monitoring the nutritional status of patients and providing early nutrition support can prevent hospital admissions, treatment delays and reduce the associated costs. Multidisciplinary teamwork can improve patient care and clinical outcomes, and it is fundamental to strengthen communication and collaboration among clinical disciplines.

Keywords: MDT intervention, dietetic referral, malnutrition, haematology

Introduction

The significance of preventing malnutrition is increasingly recognized in oncological care settings (1-2). Nutritional interventions aim to maintain fitness, reduce treatment toxicity, and mitigate acute complications (3). Patients with multiple myeloma face a dual challenge: nutritional complications from systemic anti-cancer treatment (SACT) and side effects of bone marrow transplantation. Gastrointestinal toxicities are prevalent after stem cell transplants and often result in suboptimal nutritional intake (4). Despite the importance of timely nutritional evaluation during clinical assessment (5-6), dietetic practice varies significantly (7-8).

Method

John (pseudonym), a 71-year-old male was diagnosed with immunoglobulin A (IgA) lambda myeloma ISS III after being admitted in April 2021 with back pain, hypercalcaemia and acute kidney injury (AKI). Retrospective data analysis, from diagnosis to one year after transplantation, was documented. Data relate to daily diet intake, weight, medical and psychological condition, therapies, blood and diagnostic tests, and self- and family-reported issues.

Oxford Brookes University Research Ethics committee (221638) granted approval. Patient data were retrieved from online multidisciplinary notes and reported following case report (CARE) guidelines (9).

Results

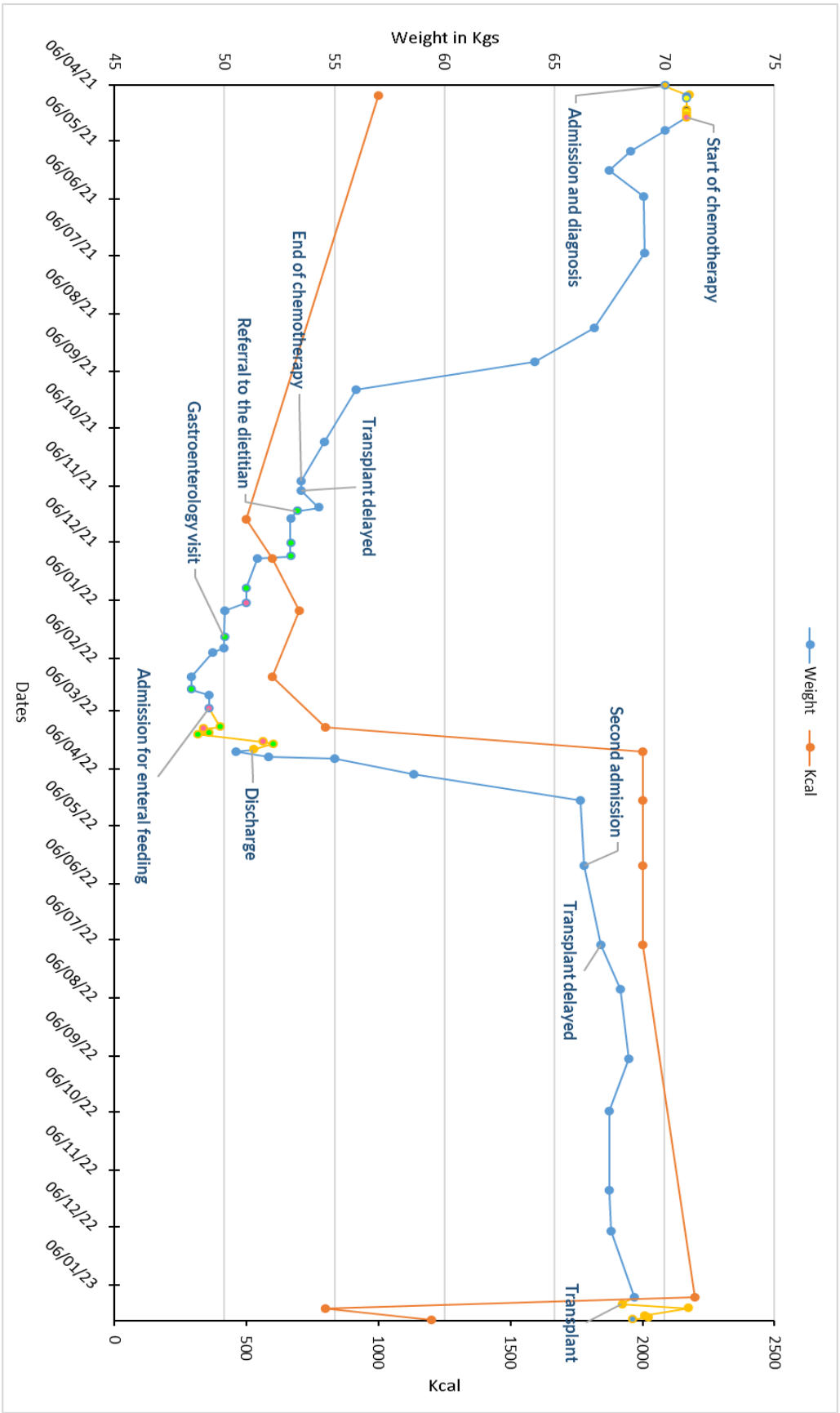
John started to lose weight immediately after starting Bortezomib, cyclophosphamide and dexamethasone (VCD) cycles (April 2021; Fig 1). He had no prior medical conditions. The weight loss could be attributed to a combination of nutritional side effects from the treatment, low mood, and limited social support. The psychologist's reports later identified John's difficulties in accepting the diagnosis, while personal circumstances further affected his appetite adversely. Despite the changes in appetite and quality of life being flagged to his medical team by his family, no dietitian attended the multidisciplinary team (MDT) meetings or was informed about his situation for over seven months. John was urgently referred to the dietetic outpatient service on 23rd November 2021 presenting with a 23% weight loss within five months (BMI=18.7 kg/m^2) and his transplant was delayed. Figure 1 illustrates John's treatment and weight history; his albumin levels are shown in Appendix A.

In November a nutritional assessment reviewed his clinical and dietetic history, anthropometrics and blood records and identified anorexia, early satiety, fatigue and low mood as primary barriers to adequate nutrition. Energy intake was suboptimal at 400-500 kcal/day, significantly below his estimated 1900-2000 kcal daily requirements.

The dietitian recommended that enteral nutrition support would be necessary to correct this deficit however there was a lack of consensus among the MDT regarding this decision. John was ultimately provided with general advice on food composition, high energy and protein diet, and on the use of oral nutritional supplements (Appendix B) however, he struggled to follow this advice.

A gastroscopy, colonoscopy and PET CT scan confirmed no underlying pathologies, while biochemical tests showed remission of the myeloma. Once poor nutrition was established as the main cause of his weight loss, in March 2022, he was admitted for enteral feeding weighing 49 kg (BMI 17.2 kg/m^2) and an overall 31% weight loss. Due to the risk of refeeding syndrome, enteral feeding was initiated with Jevity 1.5 at 28 ml/hr for 10 hours/day, providing 431 kcal/day, increasing slowly in subsequent days. The Trust's full refeeding syndrome risk protocol (Appendix C) was implemented and John's electrolytes were monitored. After six days, before John had reached full regimen (840 ml of Jevity 1.5 for 10 hours/day plus oral intake), the tube was removed in preparation for discharge. However, due to refeeding syndrome his levels of potassium and magnesium dropped, discharge was cancelled, and enteral feeding resumed. He was discharged after 13 days weighing 51.5 kg (BMI 18.2 kg/m^2). John received comprehensive support from a multidisciplinary team, including dietitians, psychologists providing him with coping strategies, occupational therapists, and physiotherapists (Appendix B with details), leading to significant improvements in motivation and compliance with diet and supplements.

After discharge, John experienced steady weight gain and his transplant was rescheduled for August 2022, by which time he had reached a weight of 67 kg and presented an improved mental wellbeing, since psychological support provided him with coping techniques and strategies. Due to insufficient kidney function his transplant was postponed for the second time and rescheduled, yet due to an improved psychophysical balance, John required minimal dietetic input and maintained a 2000 kcal daily intake. He received his transplant in January 2023 at a weight of 71 kg (BMI 25.1 kg/m^2). The transplant was successful with minimal side effects; John was discharged in February 2023, having lost only 3 kg since admission and requiring minimal nutritional support post-transplant.



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94 *Figure 1: John's weight trend over time is represented by the blue line. Green, pink, and yellow dots indicate*
95 *time points when dietetic, psychological and OT therapy reviews took place, respectively. The orange line*
96 *represents John's oral intake. Data retrieved from the EPR e-record system.*

Discussion

This report shows medical treatment alone would not have been effective in treating the patient; nutritional and psychological support, as well as mobility assistance were equally important. Therefore, it is essential that healthcare providers adopt a holistic care culture to improve cancer outcomes. New guidelines recommend multimodal prehabilitation, involving optimising patients' nutritional status, physical fitness, and mental health prior to treatment (10-11).

Lack of nutritional support pathways and poor communication among the MDT in the first months of John's treatment led to missed opportunities. The absence of a dietitian at MDT meetings and lack of nutritional follow-up contributed to a delayed dietetic referral, despite the weight being regularly monitored and staff's awareness of his weight loss.

The importance of MDT in providing effective patient care is highlighted by this case. John's anxiety was reduced by receiving continuous psychologist input, which subsequently improved compliance with nutritional therapy. Occupational therapists helped set a home environment that was more appropriate for his needs and mobility. These elements, together with the reintroduction of some physical activity with physiotherapists, all contributed a gradual regaining of appetite.

The cost of John's treatment was likely greater than that of weight loss prevention initiatives or early MDT interventions that could have shortened treatment times (12). This information is infrequently part of healthcare professionals training, yet this case report provides insights for a critical re-assessment of costs (13).

Conclusions

This case report illustrates that even with a timely cancer diagnosis and a well-structured medical treatment plan, there is room for improvement to achieve optimal cancer care. This can lead to shorter and less burdensome patient journeys and result in cost savings for healthcare systems, limiting unforeseen hospitalizations.

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Disclosure Statement

The authors declare no conflict of interest.

Author contributions

FT, SC, JT, VI and EW applied for ethics and designed the study. FT led the conduct, data extraction and writing. SC, VI, EW and JT reviewed drafts of the paper and approved the final submission.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author FT. The data are not publicly available due to their containing information that could compromise the privacy of the research participant.

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Appendix A

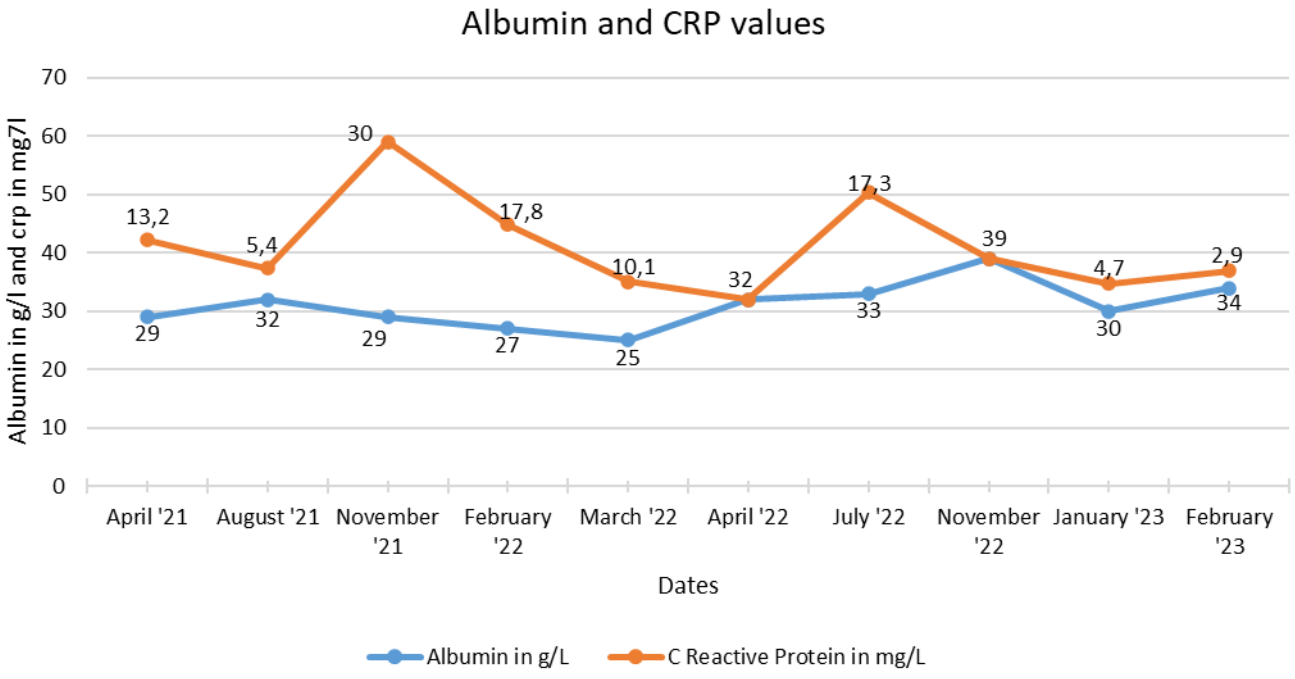

Figure 2: John's albumin trend over time is represented by the blue line. The orange line represents John's C Reactive Protein trend. Data retrieved from the EPR e-record system.

Appendix B

The patient was started on the following during his admission in March 2022:

- Wall press ups x 10 reps
- Heel raises x 10 reps
- Mini squats x 10 reps
- Walking in the ward corridor
- Sit to stand exercises

These were then gradually increased. On discharge he was also recommended to increase his walking distance and to do the home stairs multiple times during the day. The specific sets of exercises he performed during the sessions with physiotherapists have not been documented in detail in the medical notes but his improving mobility and function was clearly stated.

Oral nutritional supplements recommended were Ensure TwoCal three bottles a day (400 kcal, 16.8 g protein per bottle)

Appendix C

Oral Refeeding Syndrome Supplements:

- Thiamine 100mg twice daily for 10 days
- Multivitamins 1 tablet once daily for 10 days
- Vitamin B Compound-Strong 1 tablet twice daily for 10 days