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Laporan Kes / Case Report

Nutritional Management In Palliative Care For Refractory Diffuse Large B-Cell Lymphoma With Mediastinal Mass Complications

Pengurusan Nutrisi dalam Penjagaan Paliatif bagi Pesakit Limfoma Sel B Besar Difus Refraktori dengan Komplikasi Jisim Mediastinum

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ABSTRACT

Refractory diffuse large B-cell lymphoma (DLBCL) is a highly aggressive malignancy that poses significant challenges, particularly when complicated by comorbidities. This case report examines the nutritional management of a 70-year-old Malay male with DLBCL, who is receiving palliative care. His clinical course is further complicated by tracheal stenosis, hospital-acquired pneumonia (HAP), ischemic heart disease, hypertension, and a history of tuberculosis, all of which influence his nutritional requirements. On admission, his weight was 50 kg and height 132 cm, with a BMI of 28.7 kg/m², classified as overweight. Initially, he required NG feeding in the Intensive Care Unit (ICU) and was prescribed Jevity, an enteral nutrition formula. Upon transfer to the hematology ward, his feeding regimen was adjusted to Nutren Optimum, resulting in improvements in sodium levels and fluid balance. He was then transitioned to oral feeding, successfully tolerating a soft diet supplemented with Nutren Optimum, reaching 966 kcal (64.4% of total energy requirement) and 47 g protein (78.3% of total protein requirement) daily. This case underscores the importance of personalized nutritional interventions in optimizing patient outcomes in palliative care.

Keywords: Refractory diffuse large B-cell lymphoma, palliative care, nutritional management

ABSTRAK

Limfoma sel B besar difus refraktori (DLBCL) ialah kanser yang sangat agresif dan memberi cabaran besar dalam rawatan, terutamanya apabila disertai dengan penyakit lain. Laporan kes ini membincangkan pengurusan nutrisi seorang lelaki Melayu berumur 70 tahun yang menghidap DLBCL dan sedang menerima rawatan paliatif. Keadaan klinikal pesakit menjadi lebih kompleks akibat stenosis trakea, pneumonia yang diperoleh di hospital, penyakit jantung iskemia, hipertensi, serta sejarah tuberkulosis, yang kesemuanya mempengaruhi keperluan nutrisi beliau. Semasa kemasukan, berat badan pesakit ialah 50 kg dan tinggi 132 cm, dengan indeks jisim badan 28.7 kg/m² yang dikategorikan sebagai berat badan berlebihan. Pada peringkat awal, pesakit memerlukan pemakanan melalui tiub nasogastrik di Unit Rawatan Rapi dan diberikan formula enteral Jevity. Selepas dipindahkan ke wad hematologi, rejimen pemakanan beliau disesuaikan kepada Nutren Optimum dan menunjukkan penambahbaikan pada paras natrium serta keseimbangan cecair. Pesakit kemudiannya beralih kepada pemakanan oral dan dapat menelan diet lembut yang diperkaya dengan Nutren Optimum, dengan pengambilan harian sebanyak 966 kcal yang memenuhi 64.4% daripada keperluan tenaga dan 47 g protein yang memenuhi 78.3% daripada keperluan protein harian. Kes ini menekankan kepentingan intervensi nutrisi yang disesuaikan mengikut individu bagi mengoptimumkan hasil penjagaan pesakit dalam rawatan paliatif.

Kata kunci: Limfoma sel B besar difus refraktori, penjagaan paliatif, pengurusan nutrisi

INTRODUCTION

Diffuse large B-cell lymphoma (DLBCL) is the most common subtype of non-Hodgkin lymphoma

and is characterized by rapid progression and aggressive behavior. A subset of patients develops refractory disease, where the lymphoma does not respond to standard therapies. This presents significant clinical challenges and is associated with poor prognosis and increased risk of complications (Siegel et al. 2020). Refractory DLBCL may result in the development of bulky tumors, such as mediastinal masses, which can compress the trachea and lungs. These complications can impair respiratory function and increase susceptibility to secondary infections, including HAP (Younes et al. 2017). Patients with this condition are often immunocompromised due to both the disease itself and its treatment, further increasing the complexity of care.

The presence of multiple comorbidities can complicate the management of refractory DLBCL. In this case, Mr. O, a 70-year-old male, presented with a mediastinal mass, tracheal stenosis, right middle lobe collapse, and HAP. His medical history includes ischemic heart disease, hypertension, and smear-negative pulmonary tuberculosis. These underlying conditions necessitate a cautious approach to nutrition care, particularly regarding sodium and fluid balance. In palliative care, the primary goal is to optimize patient comfort and quality of life. Malnutrition is common in this population due to reduced oral intake, increased metabolic demands, and treatment-related side effects. Adequate nutritional support is essential to maintain functional status, prevent further deterioration, and support symptom management (Singer et al. 2019). This case highlights the importance of individualized nutrition care in the management of refractory DLBCL, especially in the palliative setting, where nutritional goals must be aligned with overall medical and functional priorities.

PATIENT'S HISTORY

Mr. O is a 70-year-old Malay gentleman admitted to the ICU on 18 December 2024, where he stayed until 30 December before being transferred to the Hematology ward. He presented with sudden-onset shortness of breath for one day, accompanied by a productive cough with whitish sputum for one week, without hemoptysis or chest pain. He is currently being treated for refractory diffuse large B-cell lymphoma (DLBCL) with a worsening mediastinal mass, leading to complications such as right middle lobe collapse, tracheal stenosis, HAP, and resolving pulmonary hemorrhage. His medical history includes refractory DLBCL, previous Hepatitis B infection, smear-negative culture-positive pulmonary tuberculosis (PTB), benign prostatic hyperplasia (BPH), hypertension, and ischemic heart disease with aortic regurgitation treated with stenting 10 years ago. He is currently receiving palliative treatment to optimize comfort and manage his symptoms, as curative options are no longer feasible.

In addition to DLBCL, Mr. O's history of pulmonary tuberculosis (TB) likely contributed to chronic lung changes such as fibrosis and reduced respiratory reserve, making him more vulnerable to severe secondary infections like pneumonia. His ongoing immunosuppression from lymphoma treatment further compromises his ability to recover from HAP. Furthermore, his underlying ischemic heart disease (IHD) and hypertension complicate his management; impaired cardiac function due to IHD increases the risk of fluid overload, while hypertension exacerbates cardiovascular strain, necessitating careful monitoring of sodium and fluid balance to prevent heart failure and stroke (Pocock et al. 2019).

ANTHROPOMETRY

The patient's weight was 50 kg, measured on the day of admission (18 December 2024). Height was recorded as 132 cm based on the hospital outpatient medical record and was not re-measured during the current admission due to the patient's critical condition and limitations within the ICU setting. Based on these measurements, the calculated body mass index (BMI) was 28.7 kg/m², classifying the patient as overweight according to Lipschitz's criteria (1994) for older adults. The ideal body weight, calculated using a BMI of 25 kg/m², was 43.6 kg. According to the patient's guardian, the patient's weight three months prior to admission was 59 kg, representing a 15.3% weight loss over three months, which is indicative of severe weight loss.

BIOCHEMICAL DATA

The patient's most recent biochemical data was from a blood test conducted on 30 December 2024, one day prior to the referral to the dietitian. The renal profile showed hypernatremia with a sodium level of 148 mmol/L and hypokalemia with a potassium level of 3.4 mmol/L. Urea and creatinine were within the normal range at 7.6 mmol/L and 68 mmol/L, respectively. His calculated eGFR was >90 mL/min/1.73m3 indicates normal renal function. The liver function test showed hypoalbuminemia (20 g/L) and low total protein (52 g/L), likely due to malnutrition or hepatic involvement. Elevated alkaline phosphatase (256 U/L), alanine transaminase (86 U/L), and aspartate transaminase (29 U/L) may suggest lymphoma-related or drug-induced liver injury. Calcium (2.31 mmol/L) and magnesium (0.83 mmol/L) were within normal ranges, while phosphate was low at 0.65 mmol/L. The C-reactive protein (CRP) was significantly elevated at 110.41 mg/L, indicating inflammation.

CLINICAL ASSESSMENT

A nutrition-focused physical examination could not be performed as the patient was managed in an isolation room due to active infection, limiting direct bedside assessment by the dietitian. Clinical observations were therefore obtained indirectly through discussion with the nurse in charge, review of medical and nursing records, and visual observation from outside the isolation room, in line with infection control protocols.

The patient was reported to be alert, conscious, and fully responsive, with a Glasgow Coma Scale (GCS) score of 15. Vital signs were stable, with a temperature of 36.6°C, blood pressure of 118/54 mmHg, heart rate of 89 beats per minute, respiratory rate of 18 breaths per minute, and oxygen saturation (SpO_2) of 100% on 5 L/min nasal prong oxygen. The patient had an indwelling urinary catheter, with urine output ranging from 50–120 mL/hour. Bowel movements were documented twice on the previous day, with normal stool consistency. Nasogastric (NG) aspirate was 195 mL. Daily fluid balance showed an intake of 1331 mL and output of 1888 mL, resulting in a negative balance of 686 mL.

The patient had been receiving NG tube feeding since admission. The medication history, reviewed from medical records, included bisoprolol 1.25 mg once daily and amlodipine 5 mg once daily for hypertension and ischemic heart disease, potassium chloride solution 3 g three times daily for correction of hypokalemia, allopurinol 200 mg once daily, lenalidomide 10 mg once daily for refractory diffuse large B-cell lymphoma, tenofovir disoproxil fumarate 300 mg once daily for a previous hepatitis B infection, and ezetimibe 10 mg once daily.

DIETARY ASSESSMENT

He was started on NG feeding with Jevity on 23 December 2024 while he was in the ICU. Jevity was prescribed by the previous dietitian in the ICU ward, as the patient had recently started NG feeding. This standard formula, known for its high fiber content, is a ready-to-use product commonly administered in ICU settings. The prescribed feeding regimen began with continuous feeding at an initial rate of 10 mL/hour for the first 24 hours, gradually advancing to a maximum rate of 50 mL/hour. Additionally, the regimen included a flushing protocol of 50 mL of water every six hours, along with gastric residual volume (GRV) checks every six hours. By 28 December 2024, the patient was at the maximum feeding rate, receiving 1272 kcal/day (25.4 kcal/kg body weight) and 52.4 g of protein (1.05 g/kg body weight). The total fluid intake from the feeding regimen was 1200 mL, with an additional 200 mL from water flushes. The patient tolerated the feeding well, with no signs of aspiration reported. This feeding regimen met 84.8% of the patient's estimated energy requirement.

NUTRITION DIAGNOSIS

Inadequate oral intake related to dysphagia and disease burden secondary to refractory diffuse large B-cell lymphoma as evidenced by dependence on NG tube feeding and inability to meet nutritional requirements orally.

NUTRITION INTERVENTION

The short-term nutritional goal is to optimize the patient's nutritional status by ensuring adequate protein and energy intake and to achieve normal sodium levels. The long-term goal is to prevent further weight and muscle loss, particularly in view of the patient's prolonged hospital stay and reduced appetite since admission, which necessitated the initiation of enteral feeding. Although the patient's body mass index falls within the overweight range, actual body weight was used to estimate nutritional requirements due to the presence of severe unintentional weight loss, with the primary aim of preventing further weight loss and maintaining adequate nutritional intake. Using the quick method, the patient's energy requirement is estimated at 30 kcal/kg body weight (1500 kcal/day). Protein requirements are calculated at 1.2 g/kg body weight, in accordance with the Dietitians Association of Australia (DAA) 2008 guidelines for oncology patients undergoing radiotherapy, providing a total of 60 g protein per day. The previous maximum NG feeding regimen met only 84.8% of the estimated energy requirements. Therefore, enteral feeding was initiated and advanced as tolerated according to institutional protocol. To meet these requirements, the nutritional intervention includes transitioning from Jevity to Nutren Optimum, a standard complete formula suitable for the patient's condition. The proposed regimen involves bolus feeding with 7 scoops of Nutren Optimum mixed with 210 mL of water, supplemented with 50 mL of water flushes. The detailed feeding plan is outlined in Table 1.

Nutren Optimum was selected in preference to Jevity based on its lower sodium content when standardised to a comparable reconstituted volume, in addition to its suitability for bolus feeding and patient tolerance. To ensure clarity and avoid confusion related to differences in product formulation, sodium content is presented using consistent units per 100 mL of prepared formula. When compared on this basis, Nutren Optimum provides a lower sodium content than Jevity, making it a more appropriate option for this patient in view of elevated sodium levels.

NUTRITION MONITORING AND EVALUATION

For nutrition monitoring and evaluation, feeding tolerance, fluid balance, and relevant biochemical parameters were closely monitored throughout the case. Given the patient's history of reduced intake and baseline hypophosphatemia (0.64–0.7 mmol/L), he was considered at risk of refeeding syndrome. Enteral feeding was therefore initiated cautiously with gradual advancement, accompanied by close biochemical monitoring. Electrolytes, including phosphate, potassium, and magnesium, were monitored regularly as part of routine ICU care, and potassium supplementation was administered as prescribed to correct hypokalaemia. Phosphate levels were closely observed during the initiation of feeding, with replacement administered as clinically indicated according to ICU protocol, and no clinical features suggestive of refeeding syndrome were documented during the monitoring period. Between 2 January and 7 January 2025, a total of three dietetic follow-up sessions were conducted to evaluate Mr. O's progress, with particular attention to his tolerance of the newly initiated enteral feeding product. Table 2 presents the biochemical parameters obtained during the follow-up period to monitor the patient's condition.

These follow-up sessions emphasized monitoring NG feeding tolerance and assessing his overall nutritional status. Overall, Mr. O's condition is showing signs of improvement. A comprehensive summary of his nutrition-focused physical findings is outlined in the Table 3 for further reference. During the follow-up period, Mr. O's dietary intake was monitored. On 2 January 2025, he started Step 3 of the feeding regimen, but the 12:00 p.m. feeding was poorly tolerated, with 240 mL of undigested formula aspirated via the NG tube. The 3:00 p.m. feeding was omitted, and intravenous Maxolon (10 mg, three times daily) was introduced to improve feeding tolerance. By the second follow-up on 5 January 2025, Mr. O tolerated the full regimen, achieving 1512 kcal and 63 g of protein, meeting his energy and protein needs. Total fluid intake was 1560 mL, including water flushes. By the third follow-up on 7 January, Mr. O transitioned to a soft diet, with approval from the Speech and Language Therapy (SALT) team on 6 January. He successfully consumed one cup of milk, one cup of water, and completed a full soft meal by dinner. His appetite gradually improved, and by 7 January, he managed half a bowl of porridge. He continued taking 6 scoops of Nutren Optimum with 180 mL water once per day as an oral nutritional supplement, providing 216 kcal and 9 g of protein. His total intake of 966 kcal and 47 g of protein met 64.4% of energy and 78.3% of protein requirement

TABLE 1 Feeding Plan for Mr. O

Step	Scoops	Water (mL)	Flush (mL)	Energy (kcal)	Protein (g)	Notes
1	3	90	50	648	27	Start feeding; flush every 3 hours. Check GRV every 6 hours.
2	5	150	50	1080	45	Step up after 2 feedings at previous step
3	7	210	50	1512	63	Step up after 2 feedings at previous step
Full regime	7	210	50	1512	63	Provides 1512 kcal (30.24 kcal/kg BW), 63 g protein (1.26 g/kg BW), fluid 1560 mL; omit midnight (12:00 AM and 3:00 AM feeds.

Note: Flushing with 50 mL water every 3 hours and GRV checked every 6 hours.

TABLE 2 Laboratory findings of Mr. O during hospitalisation

Parameter	30/12/2024	02/01/2025	06/01/2025	Reference Range
Renal Function				
Sodium (mmol/L)	148 (High)	144	133 (Low)	136–145
Potassium (mmol/L)	3.4 (Low)	2.7 (Low)	3.7	3.6–5.2
Urea (mmol/L)	7.6	8.1	9.1 (High)	3.2–8.2
Creatinine (μmol/L)	68	70	78	54–97
Liver Function				
Total protein (g/L)	52 (Low)	51 (Low)	55 (Low)	64–82
Albumin (g/L)	20 (Low)	21 (Low)	24 (Low)	32–48

Parameter	30/12/2024	02/01/2025	06/01/2025	Reference Range
Alkaline phosphatase (U/L)	256 (High)	209 (High)	206 (High)	45–129
ALT (U/L)	86 (High)	44	42	10–49
AST (U/L)	29	20	22	<34
Electrolytes				
Calcium (mmol/L)	2.31	2.23	2.34	2.2–2.6
Phosphate (mmol/L)	0.65 (Low)	0.64 (Low)	0.70 (Low)	0.78–1.65
Magnesium (mmol/L)	0.83	0.60	0.66	0.53–1.11
Inflammatory Marker				
CRP (mg/L)	110.41 (High)	38.86 (High)	Not assessed	<5.0
Complete Blood Count				
Hb (g/L)	N/A	48 (Low)	78 (Low)	130–170

Note: Reference normal ranges are based on values from the University Malaya Medical Centre

TABLE 3 Summary of Mr. O's nutrition-focused physical findings during hospitalisation.

Date	Cognitive Status	Vital Signs (BP)	Respiratory Status	Gastrointestinal	IV Drip
2 January 2025	Alert and conscious, full GCS	134/65 mmHg	On oxygen 2 L/min via nasal prong, SpO_2 100%	Bowel open (small amount, soft stool), good urine output	Not supported
5 January 2025	Alert and conscious, full GCS	109/62 mmHg	Room air, SpO_2 99%	Bowel open twice (normal stool), good urine output	Not supported
7 January 2025	Alert and conscious, full GCS	115/69 mmHg	Room air, SpO_2 99%	Bowel open twice (normal stool), good urine output	Not supported

DISCUSSION

Patients with refractory diffuse large B-cell lymphoma (DLBCL) receiving palliative care often face complex nutritional challenges due to disease burden, systemic inflammation, and treatment-related complications. Nutrition care in these patients aims to maintain functional status, reduce symptoms, and prevent further nutritional deterioration rather than achieve weight gain. Cancer-related inflammation and tumour metabolism can increase energy expenditure and accelerate muscle breakdown, contributing to weight loss and impaired immunity (Arends et al. 2017; Arends et al. 2021). Current ASPEN and ESPEN guidelines recommend early, individualised nutrition support when oral intake is insufficient, with adequate energy and protein to reduce the risk of malnutrition and cachexia (Singer et al. 2019; Compher et al. 2021). In this case, enteral nutrition was indicated due to dysphagia and respiratory compromise from tracheal stenosis, which increased aspiration risk. Feeding intolerance is common in critically ill and oncology patients and may be worsened by altered gut motility, medications, and immobility (McClave et al. 2016).

Patients with airway compromise or high aspiration risk are often managed with cautious feeding strategies, such as controlled bolus or continuous enteral feeding, depending on tolerance and stability (ESPEN 2019). Bolus NG feeding was used here with close monitoring, alongside prokinetic therapy (metoclopramide) to improve gastric emptying and tolerance (McClave et al. 2016). Electrolyte management is an important part of nutrition support in these patients. The formula was switched from Jevity to Nutren Optimum to improve electrolyte balance and tolerance. After the change and ongoing monitoring, sodium levels improved, highlighting the need to individualise formula choice based on clinical and biochemical parameters. Monitoring focused on biochemical results, fluid balance, and feeding tolerance. Repeated weight and functional assessments were limited by ICU admission and isolation precautions, which reflects real-world challenges in managing nutrition for critically ill palliative patients.

CONCLUSION

In palliative care, nutrition management prioritises comfort, symptom relief, and quality of life rather than curative outcomes. For this patient with refractory DLBCL and multiple comorbidities, individualized nutrition support helped stabilise metabolism, manage feeding difficulties, and prevent further nutritional decline. Careful formula selection, close monitoring of electrolytes, use of

prokinetic agents, and a gradual transition from enteral to oral intake were implemented in line with ASPEN and ESPEN recommendations (Singer et al. 2019; Compher et al. 2021), ensuring the patient's needs were met while respecting palliative care goals. This case highlights the importance of flexible, patient-centred nutrition care in complex oncology and palliative settings.

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