Nutritional management after total laryngectomy

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Background information

The patient, a 55-year-old male, was admitted to hospital on 28 September 2010 with a known diagnosis of cancer of the larynx. The patient, who underwent a total laryngectomy on 13 October, had a tracheostomy inserted previously. Prior to the surgery the patient was consuming a soft diet and oral supplementation drinks. He had no previous history of any other illnesses.

Course of illness

On the second day post-surgery, the patient was discharged from the intensive care unit and transferred back to the ear, nose and throat ward. A gastrografin swallow to evaluate his swallowing ability was booked for 19 October and radiotherapy treatment was planned to begin on 9 November. The first gastrografin swallow was unsuccessful. On the 13th day post-surgery (26 October), the patient was started on an oral liquid diet. However, he was still only able to swallow small amounts of fluid, most of which came back through his nose. A second gastrografin swallow was booked for 10 November. The patient's ability to swallow had improved but partial obstruction of the oesophagus was still suspected. The patient underwent an oesophageal dilatation and had a percutaneous endoscopic gastrostomy (PEG) tube inserted for feeding on 17 November, 34 days after admission. He was discharged from hospital on 19 November. For the patient's antropometric details, see Table I.

Table I: Anthropometric data

Weight	Prior to surgery	51.2 kg
	On 16 November 2010, three days before discharge	48.0 kg
Height		172.5 cm
Body mass index	Before surgery	17.2 kg/m^2
	At discharge	16.1 kg/m^2

Biochemistry

Prior to admission, on 14 September, the patient's serum concentrations for sodium, urea and creatinine were 114 mmol/l, 1.2 mmol/l and 25 mmol/l, respectively. These low levels may indicate chronic malnutrition. By 15 November, sodium, urea and creatinine had normalised to 140 mmol/l, 5 mmo/l and 58 mmol/l, respectively, after treatment and nutritional support. The only available value for albumin was 28 g/l on 9 October.

Nutritional management

The patient was referred to the dietitian on 14 October for nutritional management. The nutritional calculations were done on an ideal body weight of 60 kg (body mass index, BMI, of 20 kg/m^2), as the patient's BMI was classified as being grade 1 undernutrition.

The surgeons requested supplementary total parenteral nutrition (TPN), and thus the European Society for Clinical Nutrition and Metabolism (ESPEN) guidelines for parenteral nutrition were used,[1] as follows:

- Energy: 1 500-1 800 kCal/day at 25-30 kCal/kg.
- Protein: 61-76 g/day at 1.2-1.5g/kg (using the pre-surgery actual body weight of 51.2 kg).

The patient received supplementary TPN between 14 October and 9 November. During this period, initiation of an oral liquid diet was attempted, but the patient was unable to swallow, because of an oesophageal obstruction. By 10 November, he was able to tolerate small amounts of liquid and soft foods.The patient had a PEG tube inserted on 17 November, as he was expected to have difficulty maintaining an adequate oral intake in the future. He was encouraged to consume as much food per mouth as possible, and the deficit in reaching his energy requirements was provided via supplementary PEG feedings during the night.

Discussion

Patients undergoing major surgery for head and neck cancers are often undernourished before surgery and are therefore at an increased risk for postoperative complications.[1] Nutritional support is thus vitally important. These patients will not be able to eat orally post-surgery for a variety of reasons, such as swelling and obstruction. Enteral nutrition, or a combination of enteral and

supplementary parenteral nutrition, is the recommended first choice intervention.[2,3]

The presence of an oesophageal obstruction could lead to dysphagia, resulting in decreased food intake and subsequent weight loss. Oesophageal stents or dilatations are used to improve dysphagia. Recently, self-expanding stents have become the most common method for the endoscopic treatment of oesophageal cancer. These new stents can provide almost immediate dysphagia relief.[4]

Immediately following placement of the stent, the patient should consume a liquid diet. Within 24 hours, the patient should be able to progress to a semi-solid diet. In the long term, major dietary modifications are not necessary for patients with self-expanding stents. Obstruction of the stent with a food bolus can occur. To prevent this complication, patients should chew their food properly and eat smaller food portions. It is also advised to avoid large leafy vegetables, and meats should be finely chopped and eaten with gravy or sauces. Some patients will require oral nutrition supplements to help them achieve a high-energy, low-volume diet.[4]

Placement of a stent can only alleviate dysphagia. It does not eliminate anorexia or the metabolic derangements associated with cancer. However, dysphagia, rather than the metabolic effects of the tumour, is the primary contributor to malnutrition for many oesophageal cancer patients. Stent placement will therefore help patients achieve adequate oral intake and improve their nutritional status, leading to improved quality of life and better response to treatment.[4]

Cancer treatments such as surgery and radiotherapy are known to have a negative impact on a patient's nutritional and functional status. Side-effects of radiotherapy can lead to a patient not being able to maintain an adequate oral intake. The placement of a PEG is an effective and easy way to supplement oral intake and ensure that the patient meets the nutritional requirements. PEG feeding reduces the length of stay in hospital and thus hospital costs and improves response to treatment and prognosis. It is also associated with lower rates of morbidity and mortality.[5,6]

The negative effects of the malignancy can be expected in most patients before treatment has even begun. It could thus be more beneficial in certain patients to place a prophylactic PEG.[6,7] It has been shown that early and appropriate supplementary enteral nutrition via PEG is more effective than oral nutrition alone in patients undergoing chemotherapy or radiotherapy treatment.[7] Many reviews have reported that head and neck cancer patients, who had had a PEG inserted late during their treatment course in response to significant weight loss, suffered greater morbidity than those who received it prophylactically.[7] However, the use of PEG feeding, as is the case with any means of artificial nutrition, usually leads to a decrease in the patient's quality of life. Early insertion of the PEG (within one month of beginning treatment) and shorter PEG duration have been shown to be associated with an improved quality of life in patients.[8]

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