

Prognostic Factors for Refeeding Syndrome in Head and Neck Cancer Patients

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Conclusions

HNSCC patients are inherently at risk of refeeding syndrome, which had a prevalence of 9.5% in our series. Our results suggest that site of tumour (but not tumour or nodal staging) is a prognostic indicator for developing refeeding syndrome. Our study confirms that patient weight and BMI, together with unintentional weight

loss over the preceding 3-6 months, are important factors for predicting those at risk of refeeding syndrome. Our local nutrition team's assessment was as good as the NICE guidelines in identifying at-risk populations, although appears to 'overpredict' eventual sufferers of refeeding syndrome.

Introduction

When instituting rapid carbohydrate feeding, on a background of malnutrition, there is an insulin surge mediating a marked increase in glucose uptake by cells and up-regulation of protein synthesis. There is an attendant intracellular shift of phosphate, magnesium and potassium followed by the influx of water along osmotic gradients.

It is these marked electrolyte and fluid shifts that are responsible for the potentially lethal clinical manifestations of Refeeding Syndrome (RfS). Patients with squamous cell carcinoma of the head and neck (SCCHN) are typically poorly nourished, and are particularly at risk of RfS.

Whilst the incidence of malnutrition in SCCHN patients has been reported to be

as high as 30-50%, the incidence of RfS in this population has not previously been quantified. In other malnourished populations the reported incidence of RfS range widely from 0.43% to 48%.

There is no universal definition of RfS. Some authors equate it with post-feeding plasma hypophosphataemia while others consider any decrease in plasma phosphate, magnesium and/or potassium to be diagnostic.

In 2006, the National Institute of Clinical Excellence (NICE) issued guidelines for identifying patients at high risk of developing RfS. (Box 1). Since 2002, our unit's specialist nutrition team has been assessing SCCHN patients on admission, using their own local scoring system.

Methods

189 patients with SCCHN who had been admitted for surgery or chemoradiotherapy between 2007 and 2009. The following parameters were recorded prospectively:

- height (metres),
- mass (kilograms),
- body mass index (BMI)
- % weight loss over past 3-6 months
- alcohol intake
- plasma phosphate, potassium, magnesium, calcium and albumin

Patients then identified to be at high or low risk of RfS and outcomes on institution of nutrition recorded.

Results

189 patients identified, of whom 133 were male. The age range was 29 to 90, with a mean age of 61.2 years. 14 patients had >10% weight loss in the last 3 months and 28 patients had >15% weight loss in the last 3 months. 68 patients were found not to be meeting nutritional intake requirements on admission. Overall, 19.6% were classed as malnourished. Only 12 patients had biochemical abnormalities prior to feeding.

Following the institution of nutrition, 9.5% (10 men, 8 women; age range 49

to 90 years, mean 64.3 years) developed a serum phosphate level of <0.4mmol/l and were therefore considered to have RfS. Site of tumour and risk of RfS is given in Table 2.

The stratification of patients and outcome vis RfS in given below, with the local guideline classification given in the first order subdivision. Sensitivity of NICE and local guidelines for developing RfS is 88.8% and 88.9% respectively, specificity is 67.8% and 49.1% respectively.

Site	Number (No. of RFS)	% of total population	% at high risk % going into RFS	% at low risk % going into RFS
Oral cavity	71 (14)	37.6%	52.1%	32.4%
Oropharynx	47 (2)	24.9%	42.5%	10%
Larynx	42	22.2%	57%	0%
Hypopharynx	23 (1)	12.2%	69.6%	6.2%
Oesophagus	2	1.1%	100%	0%
Nasal cavity	2	1.1%	100%	0%
Skin	1	0.6%	100%	0%
Parotid	1 (1)	0.6%	100%	100%

NICE Guidelines for high risk patients

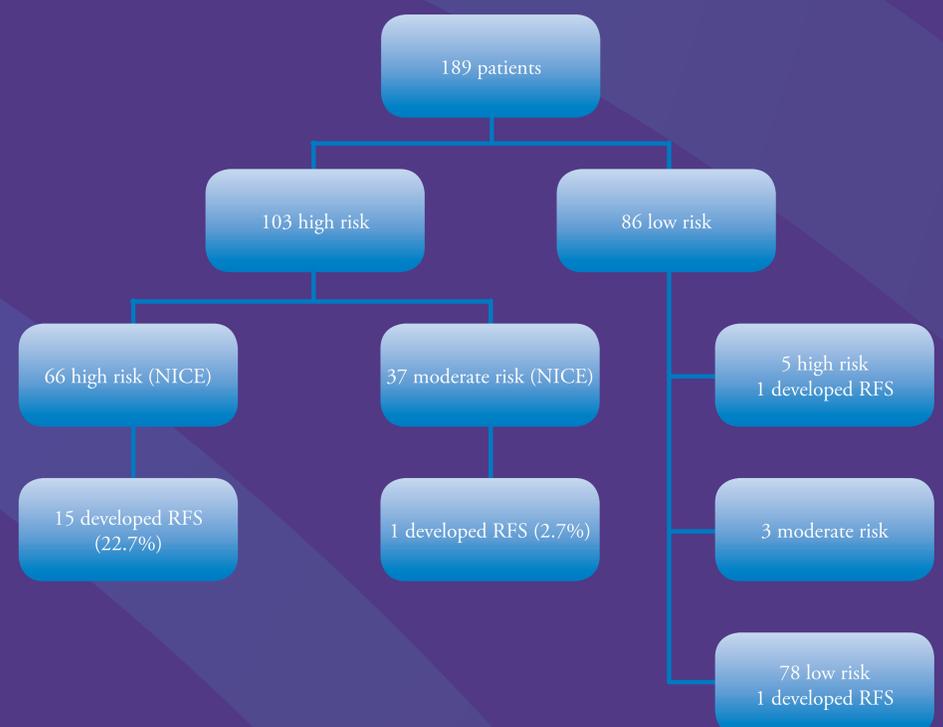
Criteria for determining people at high risk of developing refeeding problems

Patient has one or more of the following:

- BMI less than 16 kg/m²
- Unintentional weight loss greater than 15% within the last 3-6 months
- Little or no nutritional intake for more than 10 days
- Low levels of potassium, phosphate or magnesium prior to feeding.

Or the patient has two or more of the following:

- BMI less than 18.5 kg/m²
- Unintentional weight loss greater than 10% within the last 3-6 months
- Little or no nutritional intake for more than 5 days
- A history of alcohol abuse or drugs including insulin, chemotherapy, antacids or diuretics.



The following factors were deemed prognostic for RfS by multivariate logistic regression analysis (p<0.05): male sex, alcohol excess, BMI<19, >10% weight loss in the preceding 3 months, oral cavity disease. T and N stage were not prognostic.