

The prediction of decline in nutritional status during chemo-radiation therapy in patients with esophageal cancer

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Rationale

Patients with esophageal cancer are at high risk for developing malnutrition during neoadjuvant chemo-radiation therapy (CRT), which in turn is associated with postoperative morbidity.

The aim of this study was to identify which pre-treatment parameters were predictive for a decline in NS during CRT.

Methods

In this retrospective study, 98 patients with esophageal cancer treated with CRT and receiving protocolled dietary care were included. Measurements consisted of:

- Age
- Gender
- Weight change (%)
- Body mass index (kg/m²)
- Fat (free) mass index (kg/m²)
- Phase angle (°)
- Handgrip strength (kg)
- Energy- and protein intake as % of requirements
- Tumor classification
- Performance score (ASA)
- Use of (additional) nutritional supplements

A prediction model was constructed to identify predictive parameters for a decline in NS (defined as weight loss of >5% and/or decline in fat free mass of ≥1,4 kg) during CRT.

Results

NS declined in 48 patients (49%) during CRT (see Figure 1). The only independent predictor for decline in NS was fat free mass index (OR 1.20 (90% CI: 1.00-1.46)). The prediction equation to calculate the chance for decline in NS was defined as:

$$-3.472 + 0.185 * \text{fat free mass index (kg/m}^2\text{)}$$

This indicates, for example, a 46% chance to decline in NS during CRT for a patient with a fat free mass index of 18 kg/m². The area under the curve (ROC) was (0.60 (95% CI: 0.49 - 0.72)).

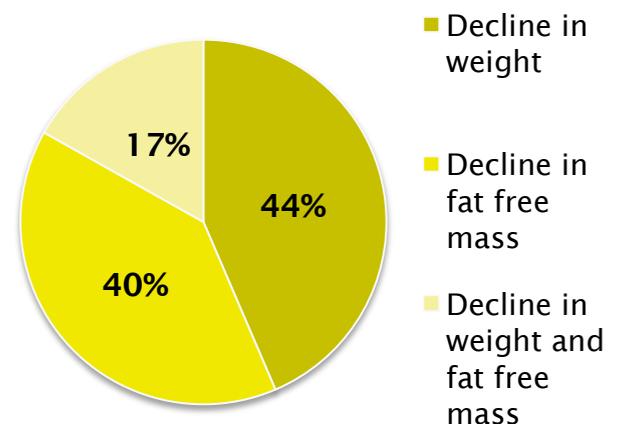


Figure 1: Distribution of patients with a decline in nutritional status during CRT (n=48 (49%))

Conclusion

Results of this study suggest that patients in a better nutritional status (i.e. higher fat free mass index) are at higher risk to decline in nutritional status during CRT, although the predictive value is small. This study indicates that all patients receiving CRT should be carefully supervised, regardless of their nutritional status at start of CRT.