

Effect of preoperative Immunonutrition on postoperative Outcomes in Head and Neck Cancer Patients

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Conclusion

Patients receiving preoperative immunonutrition had a shorter length of hospitalisation and a lower rate for wound infections and local complications compared with control group. These results remained robust after multivariate adjustment. The benefit was most pronounced in patients with high immunonutrition intake compliance, previous (chemo)-radiotherapy and extensive surgery.

Further studies are needed to better understand the effect on the immune and tumor biology and to prove the external validity of our findings.

Background

Patients with head and neck squamous cell carcinoma (HNSCC) undergoing surgery are at high risk to acquire an impaired nutritional status resulting in compromised clinical outcome regarding postoperative complications [1]. Approximately 30-50% of these patients are at nutritional risk [2]. In stress situations caused by disease or surgical interventions, specific nutrients, such as arginine, nucleotides and omega-3 fatty acids have been shown to improve the perioperative immune response when administered in sufficient amounts [3].

The aim of the study was to evaluate the effect of preoperative immunonutrition (IN) on length of hospitalisation (LOS) and postoperative short-term outcomes in HNSCC patients undergoing elective oncologic surgery.

Patients & Methods

Single center before and after study comparing clinical outcomes of consecutive patients before (control group) and after implementation (intervention group) of preoperative IN given during 5 days preoperatively. The paper- and computer-based medical charts of all adult HNSCC patients (≥18 years) undergoing elective oncologic surgery were retrospectively analysed.

- **Primary endpoint:** length of hospital stay
- **Secondary endpoints:** local and systemic complications (Buzby and Dindo classifications [4,5])



Results

A total of 411 patients were included in this study. The compliance of IN intake was high, with 83% of patients taking ≥75% of the prescribed IN. LOS was significantly lower in patients receiving IN compared to the control group (median 6 vs. 8 days, adjusted mean difference -5.65 days, p<0.001). Total complications within 30 days postoperative were similar in the two groups (33.7% vs. 34.4%). However, local wound infections (Buzby classification) were significantly less frequent in the intervention group (7.4% vs. 15.3%, p=0.006). Furthermore, there was a significantly lower risk for local wound complications such as local wound abscess and local fistula (Table 1). Subgroup analysis showed more pronounced effects in patients with previous (chemo)-radiotherapy and patients with more extensive surgery (Figure 1).

Subgroups	OR / (95%CI)
all	-5.65 (-7.74, -3.56)
NRS < 3	-5.65 (-8.31, -2.94)
NRS ≥ 3	-3.30 (-10.67, 4.07)
CRT yes	-20.24 (-31.06, -9.42)
CRT no	-3.40 (-5.03, -1.77)
Restricted surgery	-3.35 (-4.52, -2.17)
Extensive surgery	-16.62 (-24.53, -8.71)

Figure 1: Subgroup analyses for LOS

NRS = Nutritional risk score
CRT = Chemo-radiotherapy

Table 1: Effects of IN on LOS and postoperative complications

Endpoints	Control	Intervention	p-value	Multivariate model * Multivariable OR / (95% CI)
N	209	202		
Primary endpoint				
Total LOS, median (IQR)	8 (6, 14)	6 (4, 10)	< 0.001	-5.65 (-7.74 to -3.56), p<0.001
Secondary endpoints				
Local wound infections (Buzby classification)	32 (15.3%)	15 (7.4%)	0.012	0.30 (0.13 to 0.70), p=0.006
Wound abscess	16 (7.7%)	9 (4.5%)	0.17	0.29 (0.10 to 0.90), p=0.031
Fistula	13 (6.2%)	7 (3.5%)	0.19	0.10 (0.18 to 0.56), p=0.009

*Multivariate model adjusted for socio-demographics (gender, age, BMI, NRS), risks (smoking habit, alcohol habit), tumor characteristics (tumor localisation, tumor stage, type of tumor, with or without previous (chemo)-radiotherapy, type of surgery) and comorbidity (diabetes mellitus, hepatopancreatic disease, cardiovascular disease, pulmonary disease, other diseases, diseases with immunosuppressive drugs)

References

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