РАЗДЕЛ VI

# ФУНДАМЕНТАЛЬНАЯ МЕДИЦИНА

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## NUTRITIONAL STATUS OF END-STAGE ACHALASIA PATIENTS

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**Abstract**

End-stage (or "sigmoid") achalasia is a rare but severe progression of "classic achalasia" characterized by impaired relaxation of the esophagi gastric junction and absent peristalsis. It occurs in fewer than 5 % of patients. Dysphagia in end-stage achalasia of cardia often leads to progressive weight loss. This study comprehensively evaluates assessing the nutritional status of patients with proven end-stage achalasia and compare it with patients in earlier stages.

End-stage achalasia of cardia (ESA) is observed in fewer than 5 % of patients [1]. The esophagus is typically dilated to a diameter greater than 6 cm, becomes tortuous and takes on a sigmoid (S-shaped) appearance. Manometry shows an absence of coordinated esophageal peristalsis and impaired lower esophageal sphincter relaxation [2]. Patients often have longstanding symptoms with marked deterioration severe dysphagia, regurgitation of undigested food, and sometimes aspiration risks. Studies have shown that before definitive treatment, up to 45 % of patients are moderately or severely malnourished Significant unintentional weight loss is common, sometimes over 10–20 % of body weight [3–5]. Despite this obese patients with achalasia are becoming increasingly more common and is estimated to comprise 0.5–1.0 % of the achalasia population [6].

This study aims at comprehensively assessing the nutritional status of patients with proven end-stage achalasia and compare it with patients in earlier stages.

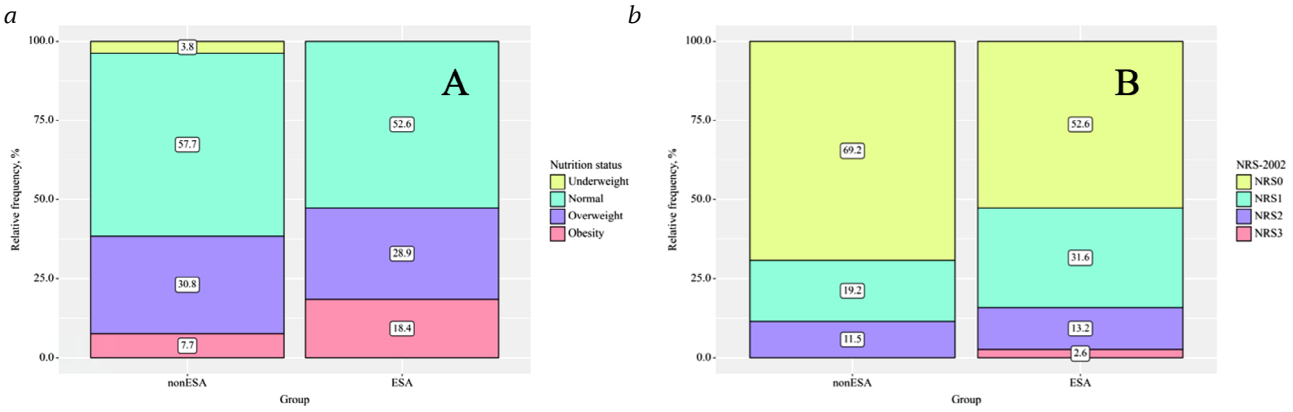
### Materials and methods

Between January 2010 and December 2024, nutritional status parameters were studied in 38 consecutive patients undergoing an esophagectomy for end-stage achalasia of cardia. The control group comprised 26 patients with grade 1–3rd achalasia patients (nonESA). The nutritional status was assumed with BMI (kg/m$^2$), NRS-2002 scale, total protein, albumin, creatinine, glucose, hemoglobin, and lymphocytes levels. Additionally, we compare groups in term of WHO weight status categories associated with BMI ranges for adults: "underweight" (BMI < 18.5 kg/m$^2$), "normal weight" (BMI 18.5–24.9 kg/m$^2$), "overweight" (BMI 25–29.9 kg/m$^2$), and "obesity"(BMI > 30 kg/m$^2$). Differences were considered statistically significant at $p < 0.05$.

### Results

No significant intergroup differences existed in age at diagnosis or gender distribution. The mean age was 55.5 years (IQR: 40.75–63.00), with female predominance in both groups (ESA: 68.4 %; non-ESA: 65.4 %). Statistically significant difference was detected in years of disease, 11.50 [3.00; 16.00] years in nonESA and 19.00 [14.00; 22.00] years in ESA group, $p < 0.001$. Several patients with ESA had symptoms of disease > 35 years in some ESA cases Statistically significant differences were revealed when comparing of aspiration depending on Group ($p = 0.014$), odds of Yes were 3.632 times greater in ESA group comparing with nonESA (95 % CI: 1.271–10.378). There were no underweight patients is ESA group, and only one patient in nonESA group, but near half of patients in ESA group were overweight (see figure, *a*). The nutritional risk calculated by NRS-2002 was higher in Group ESA, but without statis-

tical difference (see figure, *b*). Despite the BMI was similar, the levels of TP and albumin were higher in ESA group, $p = 0.005$ and $p = 0.006$.




Analysis of weight status (*a*) and NRS-2002 (*b*) conditioning on Group

**Conclusion**

While mechanical esophageal obstruction in end-stage achalasia (ESA) might be expected to cause weight loss, our study revealed comparable BMI distributions between ESA and non-ESA patients, with a notable proportion of overweight/obese individuals in both groups. However, ESA patients demonstrated significantly higher aspiration risks and postoperative nutritional vulnerability. These findings underscore the importance of preoperative nutritional optimization, tailored dietary interventions as adjunctive therapy and enhanced postoperative monitoring for malnutrition prevention.

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