

Feasibility of gastrostomy in amyotrophic lateral sclerosis patients with low forced vital capacity

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Introduction

In patients with amyotrophic lateral sclerosis (ALS), bulbar-innervated muscle impairment occurs therefore all patients requires enteral nutrition, eventually. But there is no definite consensus regarding the optimal timing of gastrostomy tube insertion and it is still controversial. The aim of this study is to investigate the safety of gastrostomy in a large number of advanced ALS patients with forced vital capacity less than 30% of predicted value (FVCpred) and, finally, to suggest a new standard of FVC in gastrostomy procedure.

Method

We evaluated a total 479 of patients who were diagnosed with ALS according to Revised El Escorial Criteria in our hospital between January 1, 2005 and December 31, 2017. 126 patients who underwent gastrostomy for the first time among those patients who had not undergone tracheostomy and under 30% of FVCpred. The medical charts were retrospectively analyzed for ventilation status, complications from gastrostomy tube insertion to the first tube change.

Result

The gastrostomy procedure was safe regardless of FVC status or respiratory support. There were complications related to the gastrostomy procedure in 7 of 126 patients and all were managed through conservative care. Comparing non-invasive intermittent positive pressure ventilation(NIPPV) to invasive positive pressure ventilation(IPPV), complications were seen in 5 of 106 patients (4.7%) and 9 of 104 patients (8.7%). There was no statistically significant difference between two groups($p=0.386$). No respiratory complications were found in any patient.

Conclusion

Percutaneous placement of gastrostomy is safe, effective procedure and can be performed in the ALS patients who have low vital capacity (FVCpred<30%). This study shows that only with non-invasive respiratory support such as NIPPV or ambu-bagging, gastrostomy was performed without severe complications such as respiratory decompression in patients who did not undergo tracheostomy surgery. We suggest that there should be a new standard of FVC to allow performing gastrostomy for ALS patients.

Table 1. Baseline demographics and clinical characteristics

	n=126
Age at PEG/PRG insertion, years	56.5±11.4
Disease duration from diagnosis at PEG/PRG insertion, years	1.9±1.8
Sex, n(%)	
Men	66(52)
Women	60(48)
Site of disease onset, n(%)	
Limb	99(79)
Bulbar	27(21)
Forced Vital Capacity, %	
Sitting	13.3±10.0
Supine	11.9±9.4
Methods of ventilation, n(%)	
Non-invasive ventilation	106(84)
Ventilator free	20(16)

Variables are expressed as mean±SD(Standard deviation).

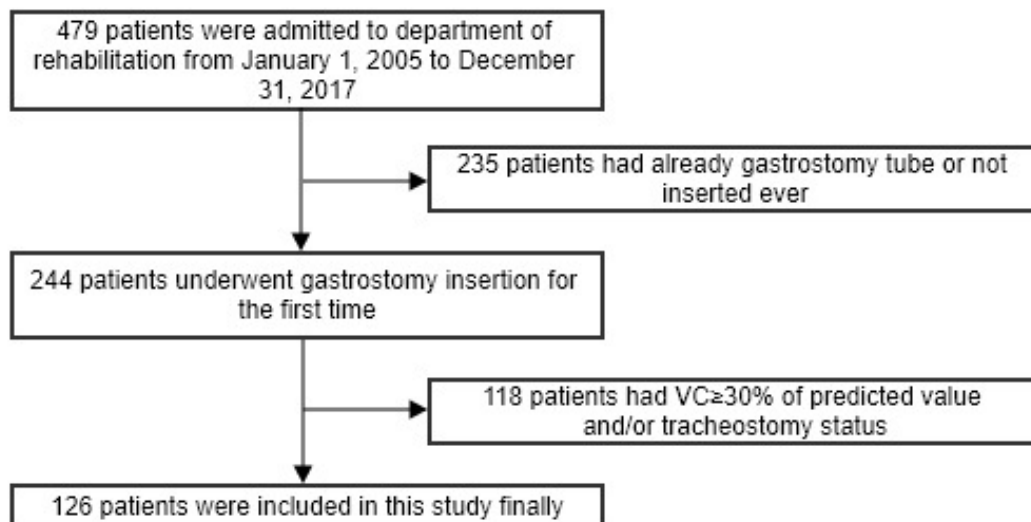


Figure 1. Flow chart of patients inclusion in this retrospective study.