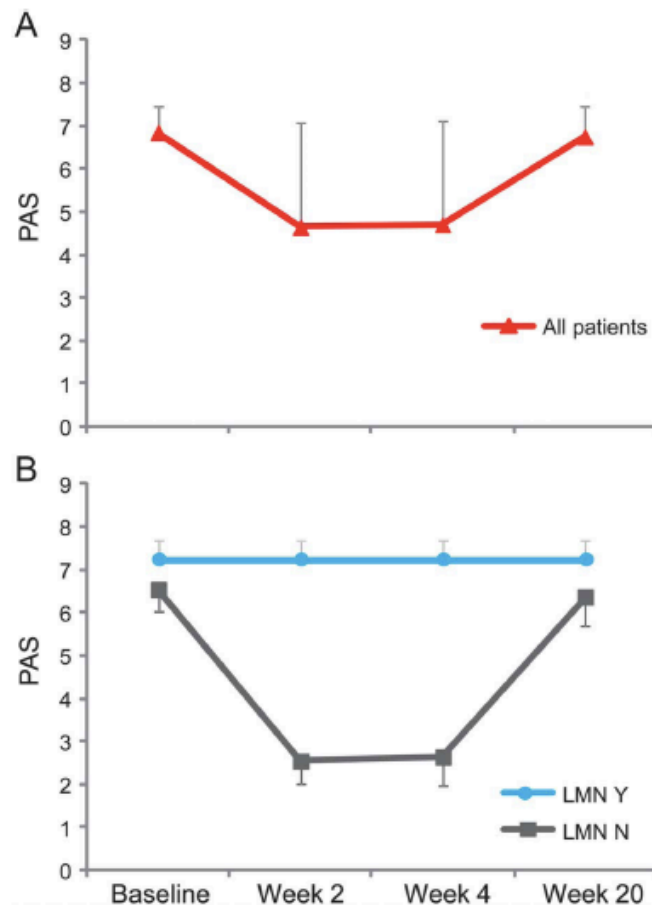


# ALS dysphagia pathophysiology

## Differential botulinum toxin response

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**Figure** Mean values and SD of the Penetration/Aspiration Scale before (baseline) and 2, 4, and 20 weeks following botulinum toxin type A administration



(A) Mean ( $\pm$  SD) Penetration/Aspiration Scale (PAS) changes for all the evaluation sessions in all 20 patients. (B) The same measurements in the 2 subgroups of patients with (group 1) or without (group 2) signs of lower motor neuron (LMN) impairment of the oropharyngeal muscles.

## A型ボツリヌス毒素接種

上食道括約筋の弛緩不全

- 下位運動ニューロン障害

➡ 嚥下スケールの改善(+)

上食道括約筋の弛緩不全

+ 下位運動ニューロン障害

➡ 嚥下スケールの改善(-)