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Introduction and Objectives

Apart from synkinesis, masticatory muscle hypertrophy is frequently observed 4-6 months after facial nerve injury. Hypertrophy may develop as a result of antagonism with m. digastricus, posterior ventricle of which is innervated by facial nerve. This leads to pain and hinders more targeted facial symmetry restoration. Aim: to evaluate the efficacy of botulinum toxin therapy in patients with facial nerve injury after neurosurgical interventions in chronic period.

Methods

150 patients with facial nerve injury after vestibular schwannoma resection were included: I group - 103 (68.7%) patients, receiving IncobotulinumtoxinA injections from the initial period of facial nerve injury. In case of synkinesis development patients received 0,5-1,5 U of BTA per injection point and 1,5-2-fold higher dose into a symmetrical point on the intact side. 10-15 U of BTA were injected into hypertrophic masticatory muscles. 47 (31.3%) patients in the II group received courses of physical therapy, special exercises and acupressure. Sunnybrook Facial Grading Scale (SFGS) was used for the evaluation of facial symmetry and synkinesis.

Results

6 months after the development of facial palsy synkinesis were registered in 47% and 64% of patients, after 1 year - in 27% and 68% ($p < 0.001$), after 2 years - in 14% and 85% ($p < 0.001$) of patients in groups I and II, respectively (fig. 1).

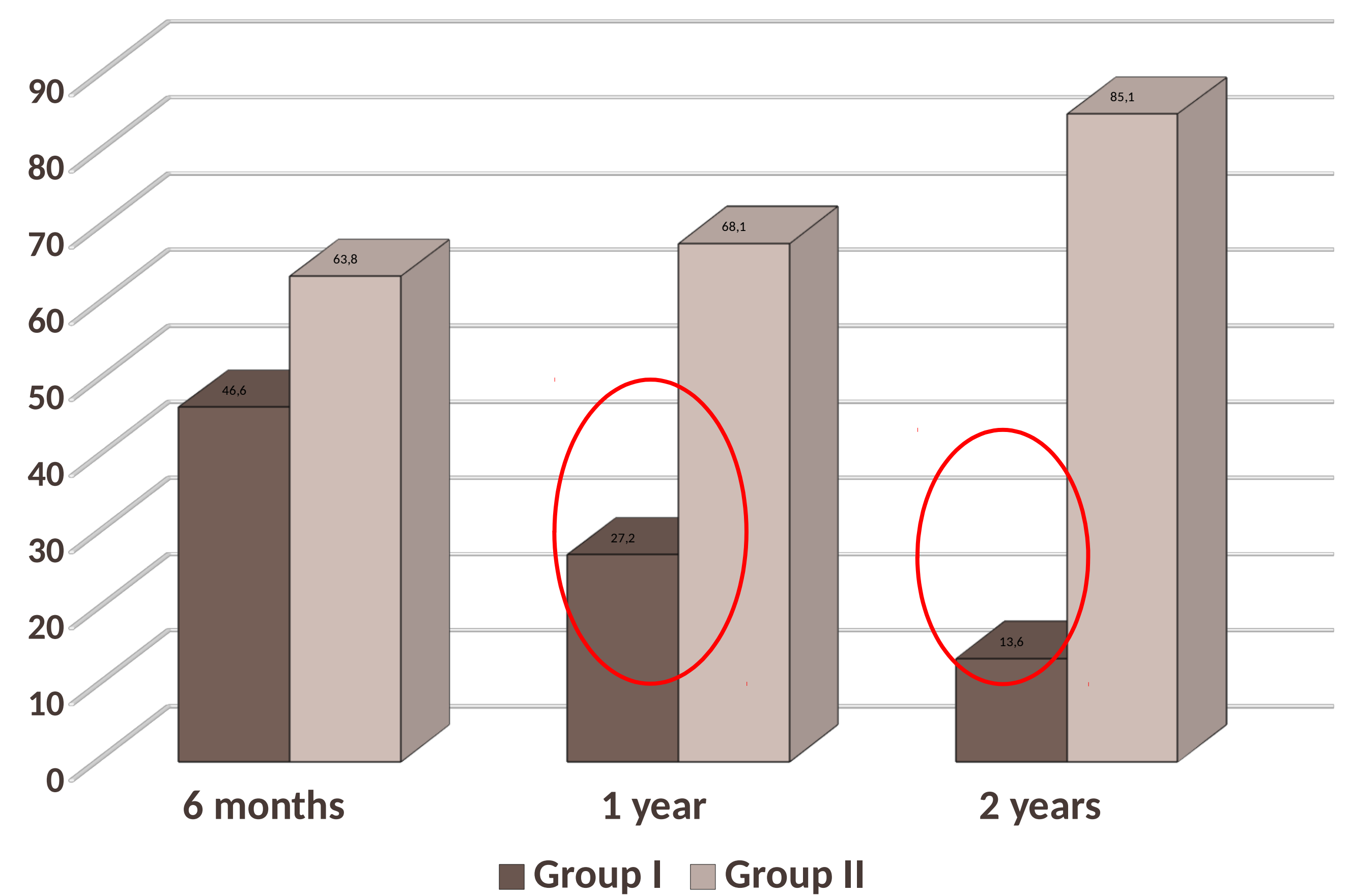


Figure 1. Number of patients with synkinesis

After 6 months local tenderness at palpation of masticatory muscles on the side of injury was evident in 25% and 30%, after 12 months - in 12% and 38% ($p < 0.05$) and after 1 year - in 7% and 49% of patients in groups I and II respectively ($p < 0.05$). 6, 12 and 24 months after the start of treatment overall facial muscle condition according to SFGS in patients in group I was 2.0-, 2.3- and 1.7-fold better, compared to group II ($p < 0.01$) (tab.1).

Conclusions

Masticatory muscle palpation and injections of 10-15 U of BTA in case of tenderness and hypertrophy is recommended.

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Table 1. Sunnybrook Facial Grading scale scores

Sunnybrook Facial Grading scale (Median [IQR])	Group I	Group II
6 months after neurosurgical intervention		
Resting symmetry	-0 [-5; -0]	-10 [-10; -5]
Symmetry of voluntary movement	92 [88; 96]	64 [48; 82]
Synkinesis	-0 [-5; 0]	-8 [-11; 0]
Composite score	92 [78; 96]	46 [28; 74]
1 year after neurosurgical intervention		
Resting symmetry	0 [-5; 0]	-10 [-10; -5]
Symmetry of voluntary movement	96 [88; 96]	60 [48; 78]
Synkinesis	0 [-2,5; 0]	-9 [-12; 0]
Composite score	96 [80,5; 96]	42 [27,5; 67]
2 years after neurosurgical intervention		
Resting symmetry	-5 [-5; -5]	-10 [-15; -5]
Symmetry of voluntary movement	84 [72; 92]	68 [60; 76]
Synkinesis	0 [0; 0]	-7 [-11; -5]
Composite score	79 [62,5; 88]	47 [37; 68]