



Predictive factors of surgical outcomes in acromegaly: what's new in 2016?

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INTRODUCTION

In the era of personalized patient management in acromegaly, transsphenoidal surgery remains the only curative treatment with fast normalization of IGF-1 level. However, patient selection is difficult for achieving satisfactory outcomes.

OBJECTIVES

1. To evaluate predictors of surgical outcome in acromegaly in order to better select patients potentially cured by surgery.
2. To compare immunohistochemical tumor profiles of patients in remission vs. active disease.

PATIENTS AND METHODS

A single-institution retrospective study from 2009 to 2015 was performed. From a cohort of 79 acromegalic patients operated by a single operator, 63 patients with complete pre- and postoperative work-up, pathological analysis, including prognostic clinicopathological classification (J.Trouillas et al.) and T2 preoperative magnetic resonance imaging (MRI) were included.

RESULTS

Three month after surgery, remission rate defined by IGF-1 normalization and/or nadir GH/oral glucose tolerance test < 1.2 mUI/l, was 50.8 %. In univariate analysis, sex, age at surgery, preoperative IGF-1, basal GH concentration or nadir GH/OGTT levels were not predictive of poor outcomes.

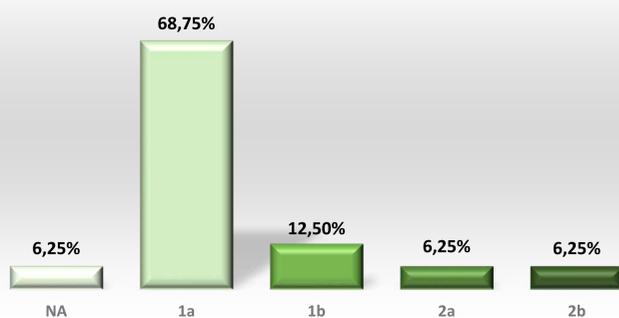
Radiologic analysis before surgery.

Patients (n=63)	Remission (n=32)	No remission (n=31)	p value
Max. diameter (mm) ^b	14 [12;17.5]	17 [13;28]	0.031
Tumor size (mm) ^a			0.034
- ≤ 10 (n=9)	15.6% (5)	12.9% (4)	
- [10.1-15] (n=22)	46.9% (15)	22.6% (7)	
- [15.1-20] (n=17)	28% (9)	25.8% (8)	
- > 20 (n=15)	9.5% (3)	38.7% (12)	
Tumor volume (mm ³) ^b	1014 [475;1500]	1512 [649;5535]	0.057
Inferior extension (5) ^a	3.1% (1)	12.9% (4)	0.151
Invasion of Cavernous sinus (Knops grade ≥ 3) (16) ^a	12.5% (4)	38.7% (12)	0.017
T2 weighted intensity signal ^{a, c}			0.366
-hypointense (11)	40% (8)	18.8% (3)	
-isointense (9)	15% (3)	37.4% (6)	
-hyperintense (10)	30% (6)	25% (4)	
-heterogeneous (6)	15% (3)	18.8% (3)	

^a % (n); ^b median [Q₁;Q₃]; ^c T2-weighted sequence evaluation was available only for 36 patients

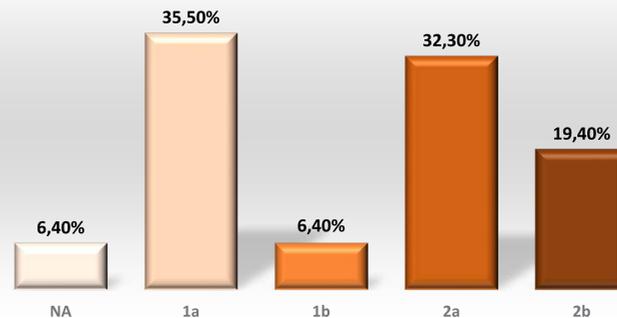
Patients with surgical remission had smaller tumor than those not cured (p=0.031). Intracavernous extension (Knops ≥ 3) were associated with a lower probability of being cured (p=0.034). T2-weighted MRI signal (n=36) was not associated with post-operative remission.

REMISSION



NA = No Available Data

NO REMISSION



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For pathological assessment, grade 2a and 2b tumors were predictive of surgical failure (p=0.009), but histological characteristics (granulation pattern, tumor subtype [GH or GH/PRL tumor], sstr2 and sstr5 expression) did not differ between groups with or without remission.

In multivariate analysis, intracavernous invasion on MRI remained the major predictor of poor surgical outcome. (OR 3.8 ; IC [0,9;16,5]) but this difference did not reach statistical significance (p=0.08).

CONCLUSION

This study confirms that intracavernous invasion and tumor size in MRI seem to be the strongest parameters to predict surgical outcomes. As regards histological characteristics, tumors of patients with surgical remission do not appear to differ from tumors of uncured patients.

References

1. John A. Jane, Jr., Robert M. Starke, Mohamed A et al. Endoscopic Transsphenoidal Surgery for Acromegaly: Remission Using Modern Criteria, Complications, and Predictors of Outcome. J Clin Endocrinol Metab 96: 2732-2740, 2011.
2. Trouillas J1, Roy P, Sturm N et al. A new prognostic clinicopathological classification of pituitary adenomas: a multicentric case-control study of 410 patients with 8 years post-operative follow-up. Acta Neuropathol. 2013 Jul;126(1):123-35.
3. Melmed S1, Colao A, Barkan A et al. Guidelines for acromegaly management: an update. J Clin Endocrinol Metab. 2009 May;94(5):1509-17.
4. Van Bunderen CC1, van Varsseveld NC, Baayen JC et al. Predictors of endoscopic transsphenoidal surgery outcome in acromegaly: patient and tumor characteristics evaluated by magnetic resonance imaging. Pituitary. 2013 Jun;16(2):158-67.

