Olfactory groove meningiomas: our clinical experience

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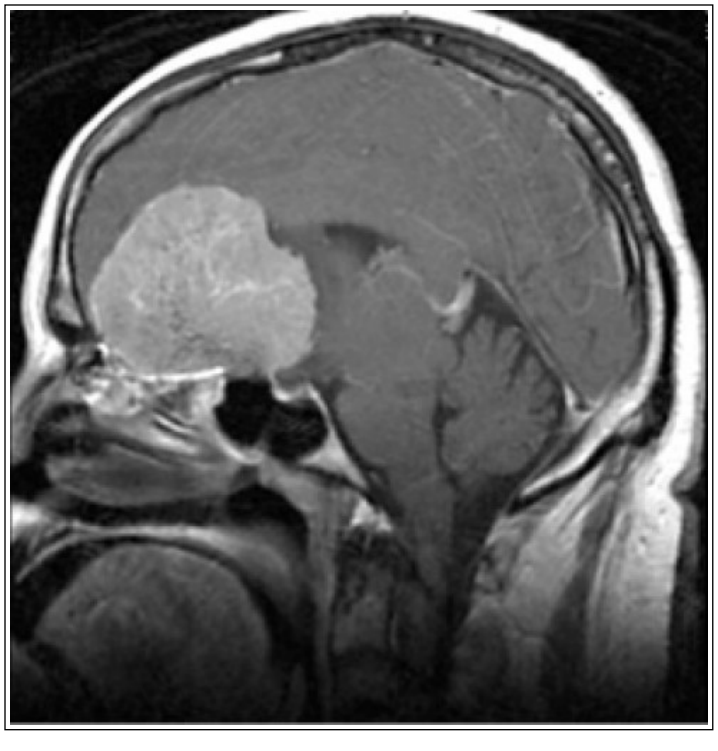
Introduction

Surgery of anterior skull base meningiomas is technically demanding. We report our experience with microsurgical dissection of olfactory groove meningiomas (OGM) over a period of 14 years.

Methods

We analyzed retrospectively all patients operated on OGM registrated in our prospectively gained meningiomas' database between the years 1997-2010. Special attention was given to mortality and morbidity and their correlation to tumor size, resection grade and perifocal edema.



Results

We could identify 46 patients with OGM from 774 patients operated on meningioma (5,9%). Mean age was 60. Male/Female ratio was 10/36. Five (10,8%) patients died due to operative complications (Table 1). Four patients worsened due to the operation. Nevertheless the rest of the patients (37) retained or improved their good clinical condition (measured both on KPS as GOS). GTR (Simpson I-III) was reached in 41 patients (89%). All, except of three patients with grade 2, had grade 1 meningioma (93%). Five patients showed recurrence during the follow-up period (4 of them with Simpson grade 4 resection grade). Tumor size < 4cm, 4cm-6cm and >6cm was noted in 9, 15 and 22 patients respectively. Edema was absent, moderate or massive in 11, 25 and 10 patients respectively Table 2). Mortality showed no correlation with resection grade, tumor size and extent of edema (p=0.55, p=0.73 and p=0.55 respectively). Morbidity (worsening of KPS Score) as well showed no correlation with resection grade, tumor size and extent of edema (p= 0.84, p=0.88 and p= 0.29 respectively).

Table 1: Mortality - Patients' Charateristics

Pt. No.	Age/Sex	KPSpre	Simpson	Edema	Size	Death Reason
1	72/F	30	2	Severe	>6cm	Meningitis
2	49/F	100	2	Severe	4-6cm	Mult. Infarctions
3	55/F	100	2	Moderate	4-6cm	Lung embolism
4	67/F	40	2	Moderate	<4cm	Mult. Infarctions
5	72/F	90	2	Moderate	<4cm	Bleeding, MCA Infarction

Conclusions

Olfactory groove meningiomas are not easy to handle but allows mostly GTR with good clinical outcome to be achieved. Nevertheless our experience shows that mortality is still present. Tumor size, edema and resection grade did not correlate whether with mortality nor morbidity (worsening of KPS Score).

Table 2: Patients' Charateristics

Pat. Char.		46 (M/F 10/36); Mean Age 60Y (Range 28-78Y)
Histology$_{No.Pat.}$	Grade1	43 (93%)
	Grade2	3 (7%)
Karnofsky Score$_{mean/median}$	Pre$_{op}$	84/90
	Post$_{op}$	76/90
Karnofsky Score$_{Change}$	Worse	4 + 5 dead
	Unchanged	21
	Improved	16
GOS	1	5
	3	5
	4	8
	5	28
Simpson's Resection's Grade	GTR	41 (89%)
	PR	5 (11%) 4 Pat. had recurrence
Tumor Size$_{No. Pat.}$	< 4cm	9
	4-6cm	15
	> 6cm	22
Edema$_{No. Pat.}$	Absent	11
	Moderate	25
	Severe	10

References

1. Ciurea AV et al. Olfactory groove meningiomas: A retrospective study of 59 surgical cases, Neurosurg Rev, April 2012
2. Bassiouni H et al. Olfactory groove meningiomas: functional outcome in a series treated microsurgically, Acta Neurochir, February 2007
3. Nakamura M et al. Olfactory groove meningiomas: clinical outcome and recurrence rates after tumor removal through the frontolateral and bifrontal approach, Neurosurgery, May 2007