

EP-755

## Mortality of patients with non-functioning pituitary macroadenoma is significantly elevated: systematic analysis of 546 cases in a tertiary referral centre in the UK

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### Introduction and Aim

Data on the mortality of patients with non-functioning pituitary macroadenoma (NFA) are limited. The aim of our study was to assess the mortality of patients with NFA and factors predicting it.

### Methods

All patients presenting to the Department of Endocrinology in Oxford with NFA treated surgically between 1963-2011 were studied. Status was recorded as either dead or alive, as of 31 December 2011 and data were retrieved through the National Health Service Central Register and the hospital records.

### Results

546 patients were identified [males/females 333/213; median age at surgery 58.7 years (range 16.1-94.2); median follow-up period 8 years (until date of death or if alive, until date the database was frozen) (range 1 month-48.5 years)]. During the follow-up period, 83 patients died.

Causes of death	%
Cardio/cerebrovascular	32.5
Infections	30.1
Malignancies	28.9
Peri-operatively during pituitary surgery	1.2
Gastrointestinal hemorrhage	1.2
Suicide	1.2
Unknown	3.6
Old age	1.2

	Observed deaths	Expected deaths	SMR (95% CI)	p value
<b>Total group</b>	83	22.9	3.6 (2.9-4.5)	<0.001
<b>Patients operated on before 1990</b>	14	3	4.7 (2.7-7.6)	<0.001
<b>Patients operated on after 1990</b>	69	19.6	3.5 (2.8-4.4)	<0.001

Clinical/imaging follow-up data (until date of death or if alive, until date the database was frozen) were available for 436 patients.

### Details of patients with clinical/imaging follow-up data

Patients (n)	Males/Females (n)	Median age at surgery (years) (range)	No or intrasellar remnant post-operatively	Extrasellar remnant post-operatively	Median follow-up period (years) (range)	Regrowth of NFA	Radiotherapy after primary surgery or for regrowth
436	269/167	58.5 (16.1-94.2)	203/431	228/431	6.9 (1 month-48.5 years)	111/436	188/436

Cox regression analysis (univariate approach) demonstrated that amongst age at surgery, NFA regrowth, radiotherapy, sex and extent of removal, the first three were significant predictors of mortality; after multivariate analysis using these three parameters, only age remained an independent significant factor (HR 1.099, 95% CI:1.073-1.126; p<0.001).

### Conclusions

Despite the advances in the management of patients with NFA in the last three decades, mortality remains high. Apart from age, factors related with the management/outcome of the tumour including radiotherapy and recurrence are not independent predictors of mortality.

### References

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Pituitary-Clinical

