

NONFUNCTIONING PITUITARY ADENOMA: A CLINICAL AND PATHOLOGICAL STUDY

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INTRODUCTION

Pituitary adenomas are common lesions and represent ~10-20% of all primary brain tumors. They can be functioning and nonfunctioning adenomas (NFPA) which represent about 30% of all pituitary tumors. The series of NFPA reported in Spain are scarce and have been usually performed in a small number of patients.

OBJECTIVE

To assess clinical outcome after pituitary surgery in patients with NFPA treated in the past 3 decades in three Spanish tertiary referral hospitals.

PATIENTS AND METHODS

A multicenter retrospective study on clinical and pathological characteristics, treatment patterns, and outcome in patients with NFPA periodically followed up in specialized neuroendocrinology units who underwent surgery in the period 1982 to 2015 was performed.

Inclusion criteria were histologic demonstration of the tumor and the absence of clinical and analytical evidence of pituitary hyperfunction.

RESULTS

Clinical data

One hundred and five patients [54 women (51.4%); age 52.3 ± 14.1 yr (range, 19-82)] were studied (figure 1). The tumor was sporadic in 100 patients (95.2%) and in the context of a multiple endocrine neoplasia type 1 in 5 patients (4.8%; 4 women).

Tumor was symptomatic at diagnosis in all patients. The main reasons for consultation were neuro-ophthalmologic symptoms such as visual disturbances and headaches, which appeared in 71.4% and 44.8%, respectively (figure 2).

Some degree of hypopituitarism was present in 53.6%. In the analysis of symptoms by sex, panhypopituitarism (p=0.004), central hypogonadism (p=0.002), and secondary hypothyroidism (p=0.003) were more commonly observed in men than in women. On the contrary, hyperprolactinemia was more common in women (p=0.002).

There were no differences in tumor size, suprasellar extension, cavernous sinus invasion, and visual field involvement between males and females (figure 3).

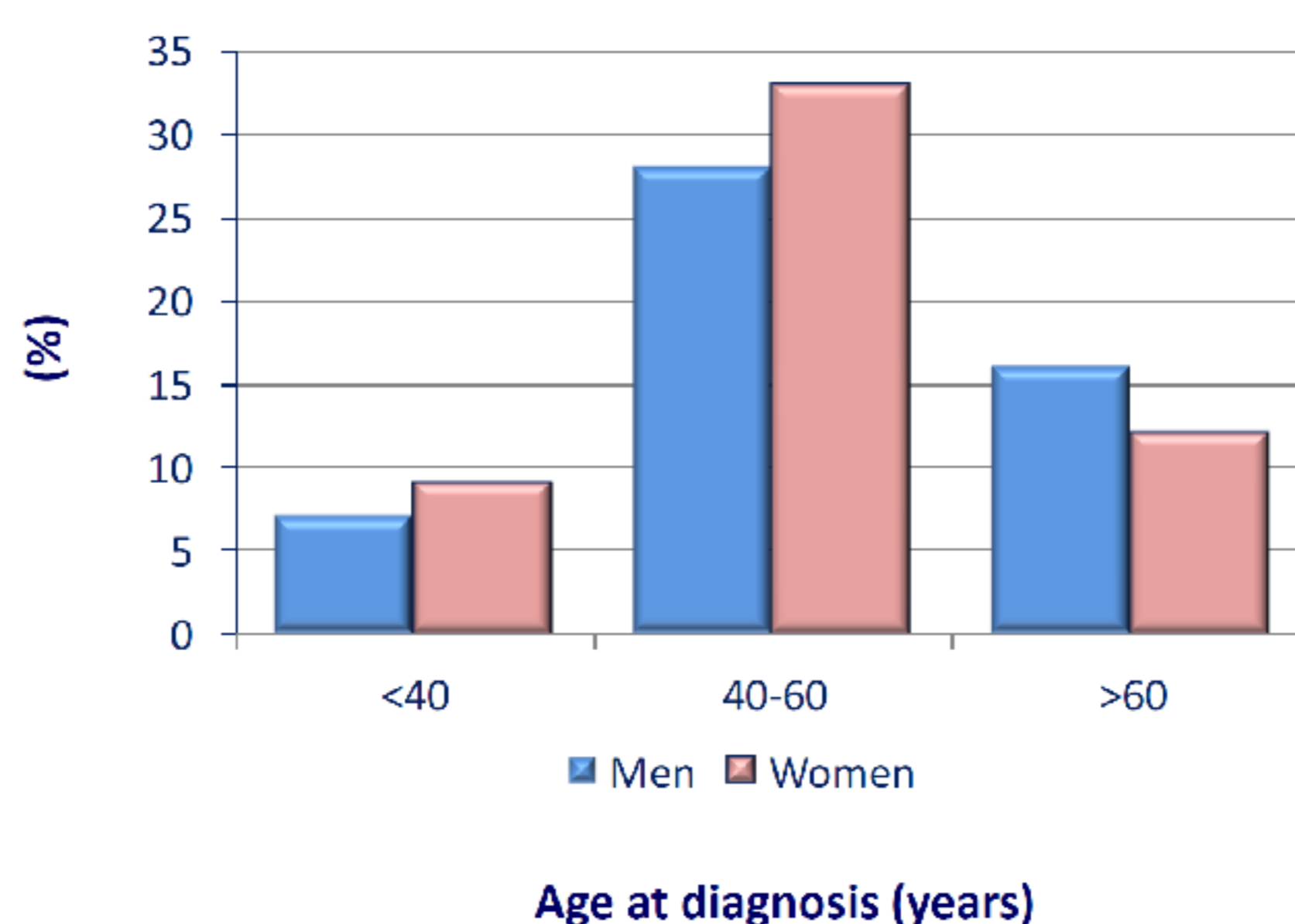


Figure 1. Percentage distribution of the 105 patients with NFPA according to age at diagnosis and sex of the patients.

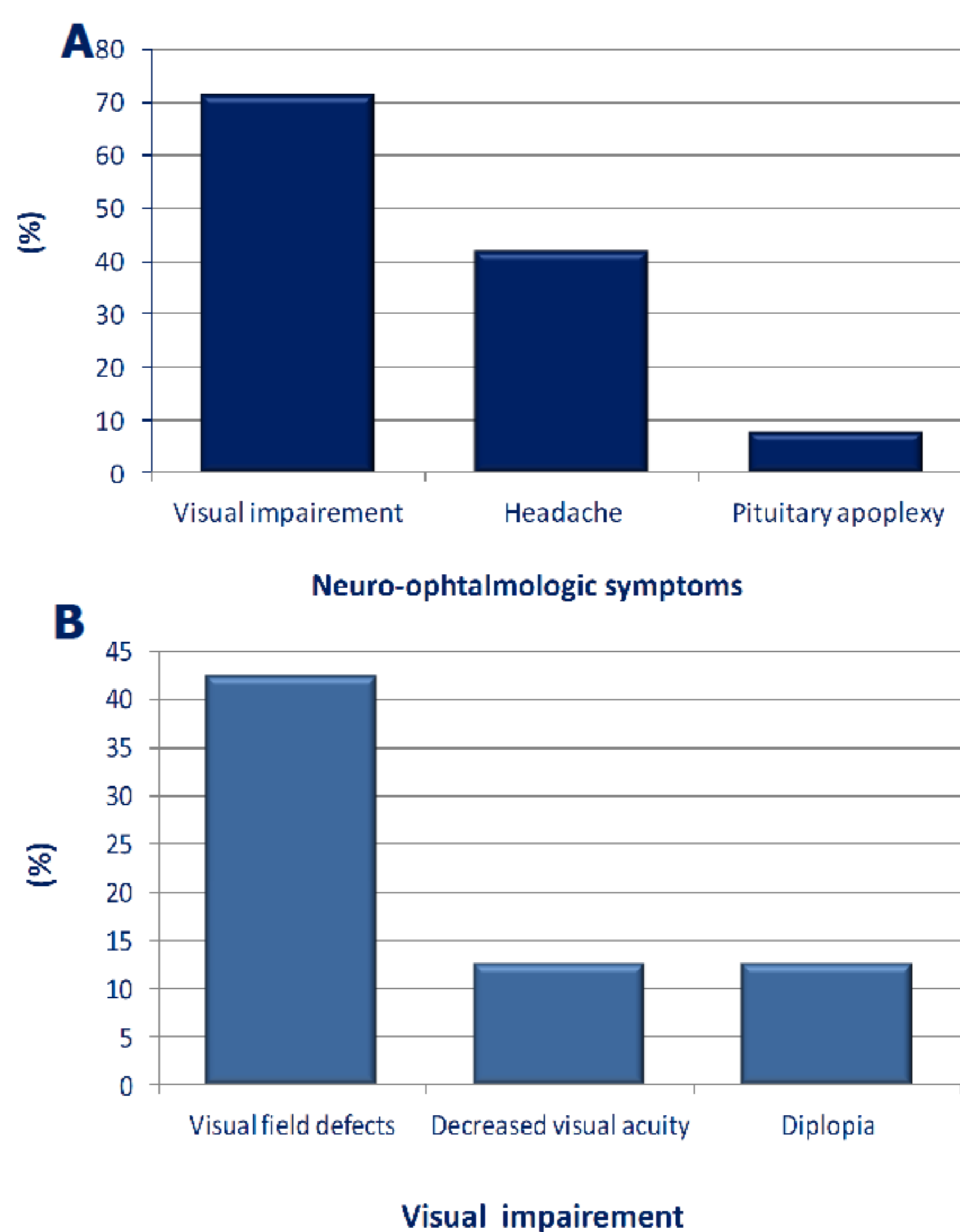


Figure 2. Percentage distribution by type of neuro-ophthalmologic symptoms (A) and type of visual impairment (B) at diagnosis.

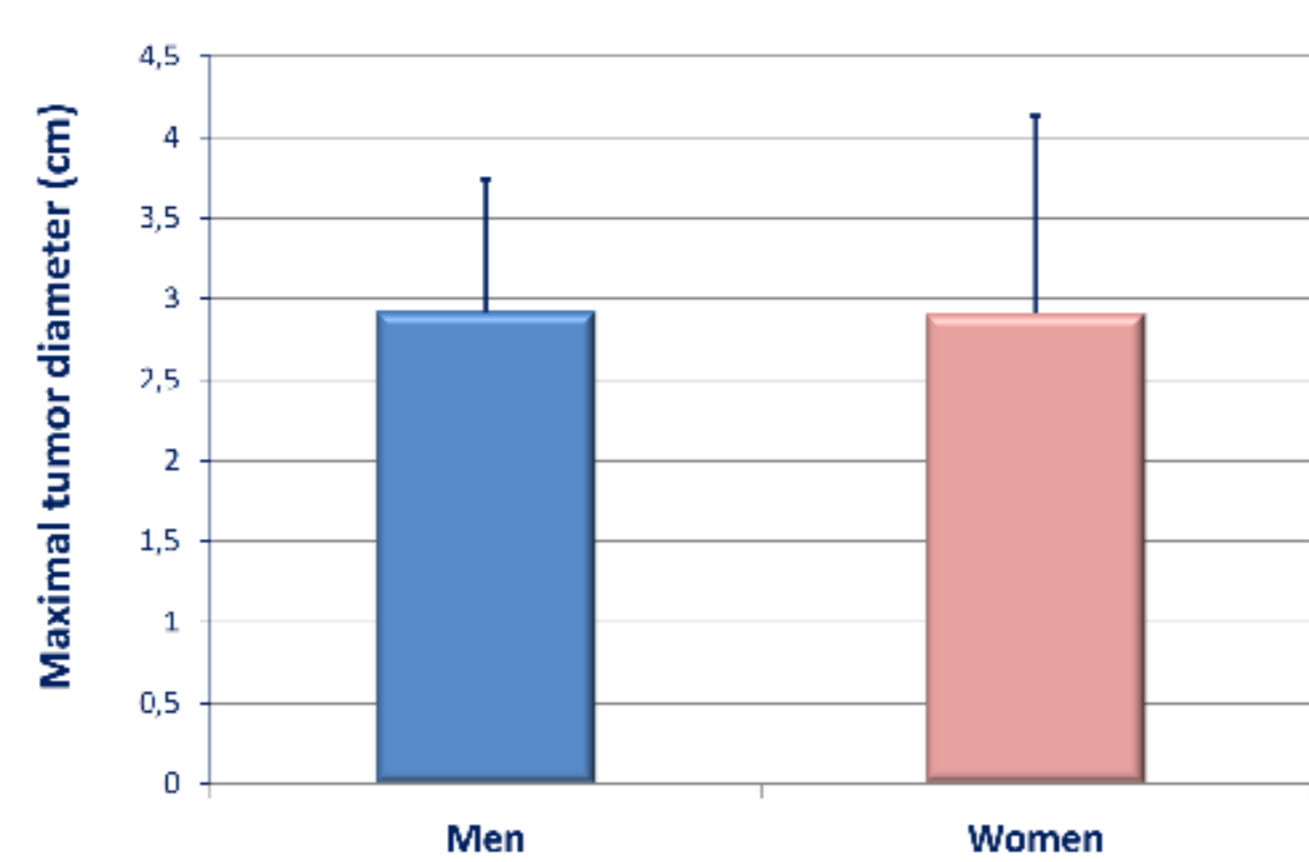


Figure 3. Maximal tumor diameter at diagnosis by sex, ns.

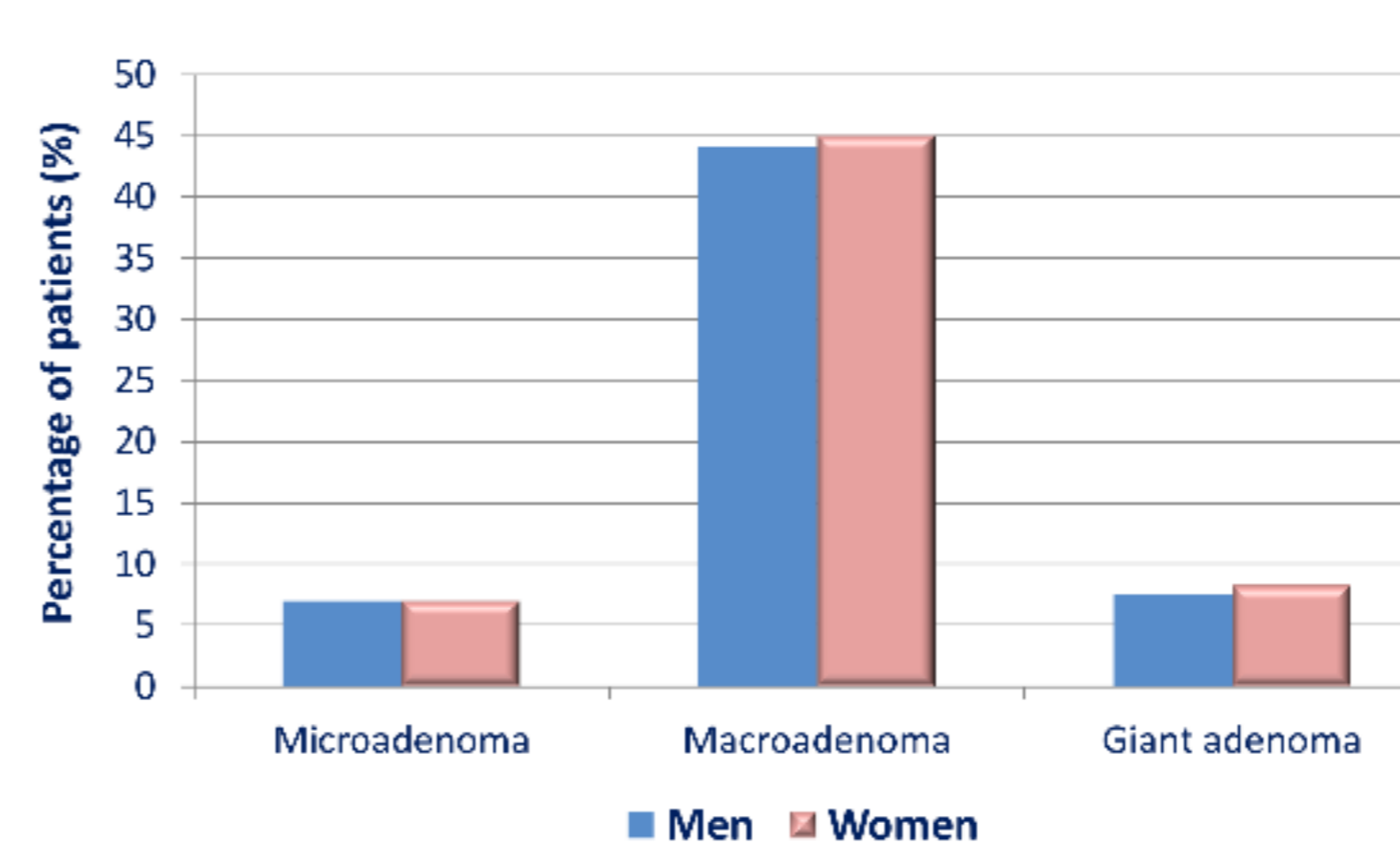


Figure 4. Percentage distribution of microadenomas (<1 cm), macroadenomas (≥1 cm), and giant adenoma (≥4 cm) by sex, ns.

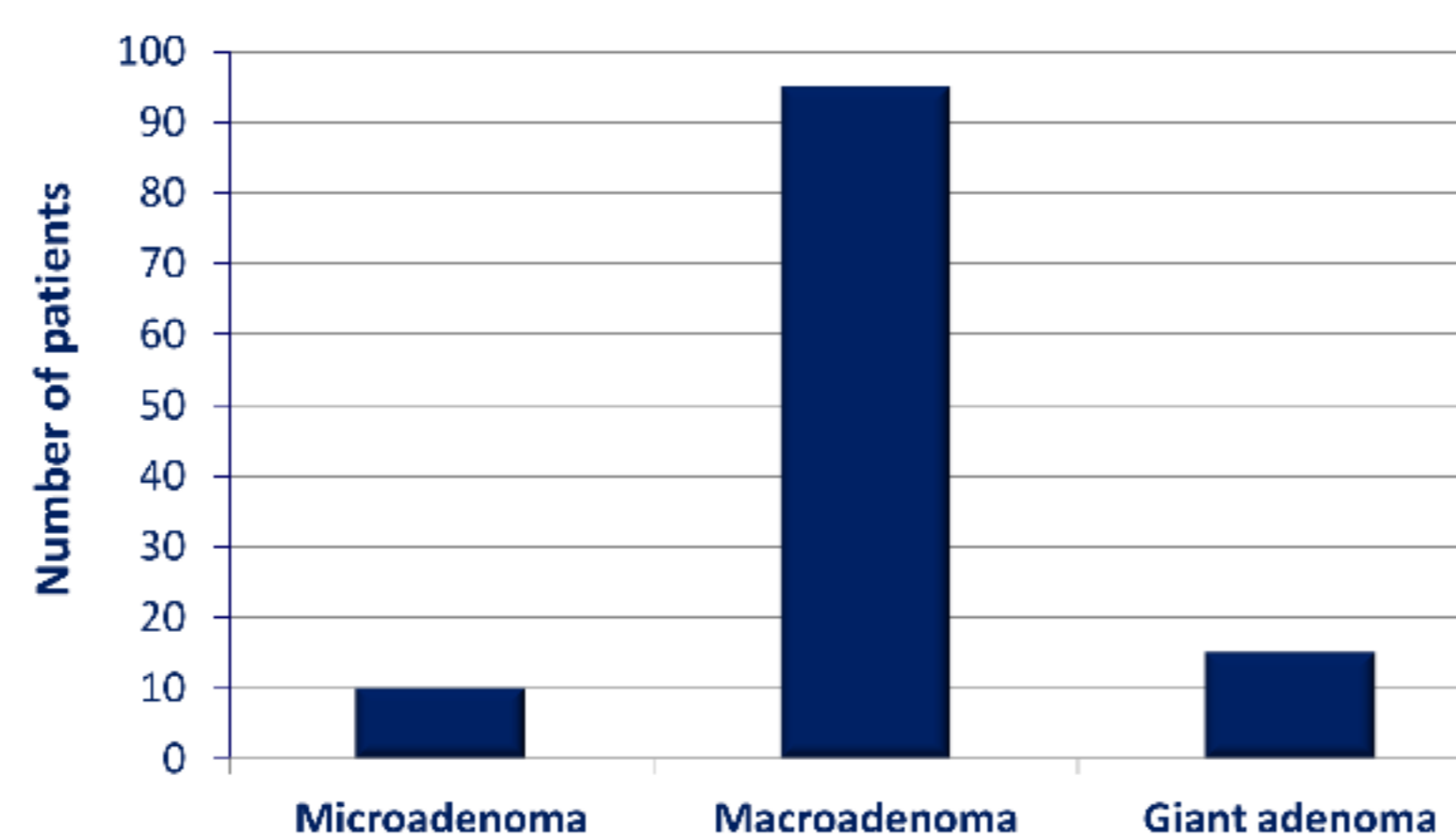


Figure 5. Number of patients according to tumor size.

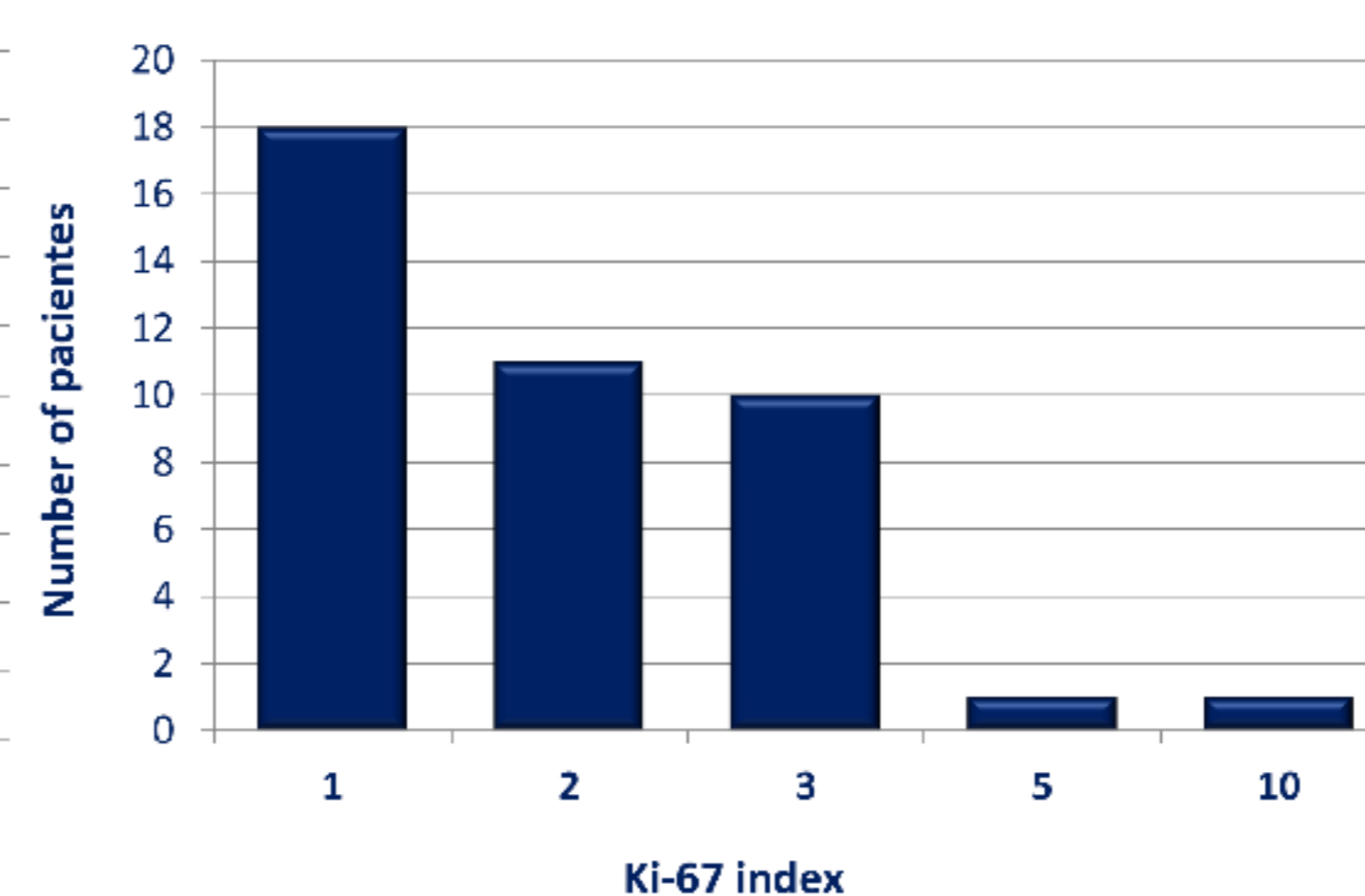


Figure 6. Distribution of 41 patients according to cellular proliferation index Ki-67.

Tumor related data

90.5% of the cases were macroadenomas (n=95), 15 of them (15.8%) giant adenomas (≥4 cm) (figure 4). Most tumors were Knosp grade 0 (n = 25, 23.8%).

The most frequent type of surgery used was endoscopic endonasal transsphenoidal surgery (n=57, 54.3%).

Immunohistochemical staining was mainly positive for LH (17.1%) and FSH (15.2%). 37 tumors (35.2%) showed a negative immunostaining and 6 tumors (15.4%) were plurihormonal.

Ki67 index was studied in 41 patients, showing the majority (n=18, 43.9%) a value <1% (figure 6).

Clinical follow-up

21 patients (20%) required a second surgery. 22 patients (21%) were treated with radiotherapy, mainly fractionated stereotactic (n=9, 40.9%).

After a median follow-up of 57 months (interquartile range 24.5-133 months), maximum tumor diameter decreased from 2.9±1.0 to 1.2±1.2 cm (p <0.001); the percentage of patients with no tumor on MRI was 25.7% (figure 7). The percentage of patients with pathological alterations in visual fields decreased from 66.6% to 33.6%; whereas, panhypopituitarism increased from 6.7% to 14.3%.

Surgery achieved complete cure (absence of tumor and normal pituitary function) in 12 patients (11.4%).

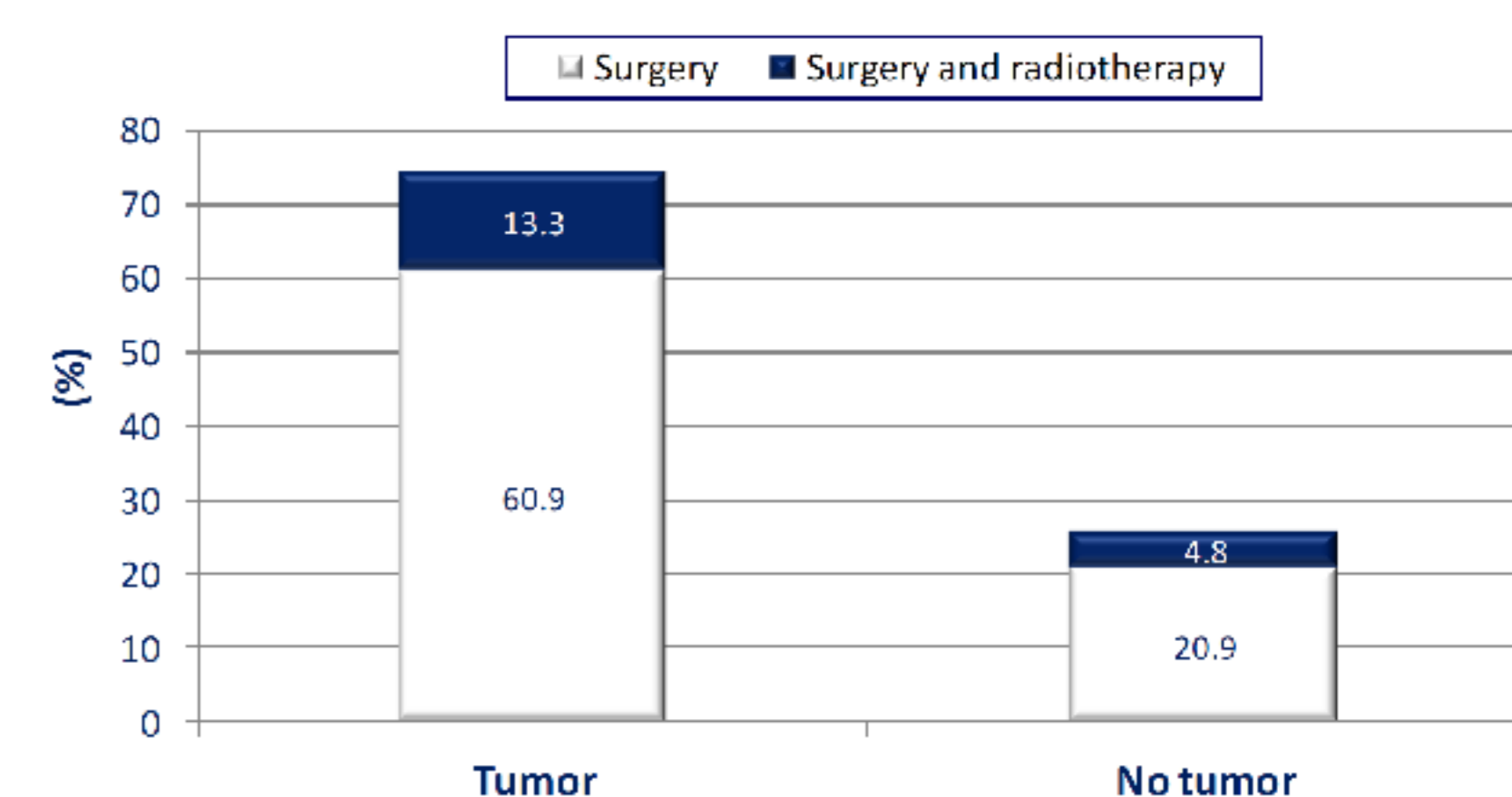


Figure 7. Percentage distribution according to the presence or absence of tumor on MRI in the last clinical visit and the type of treatment used.

CONCLUSION

NFPAs surgically treated in our country show a similar distribution between men and women, although they are clinically more symptomatic in the former. NFPAs are usually gonadotropinomas with low proliferation index. Although therapy is accompanied by improvement in visual fields, involvement of pituitary function does not improve over time. Complete cure is uncommon and long-term follow-up is needed.



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