



# PSYCHOLOGICAL AND NEUROCOGNITIVE EVALUATION IN PATIENTS WITH PITUITARY ADENOMA.



E. Sala<sup>1,2</sup>, B. Zarino<sup>3</sup>, E. Malchiodi<sup>1,2</sup>, E. Verrua<sup>1,2</sup>, G. Carosi<sup>1,2</sup>, M. Locatelli<sup>3</sup>, P. Rampini<sup>3</sup>, G. Carrabba<sup>3</sup>,  
A. Spada<sup>1,2</sup>, G. Mantovani<sup>1,2</sup>.

<sup>1</sup>Department of Clinical Sciences and Community Health, University of Milan; <sup>2</sup>Endocrinology and Diabetology Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, <sup>3</sup>Unit of Neurosurgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy.

## OBJECTIVES

Reduced health-related quality of life (HRQoL) and impairment in neurocognitive functions are a possible complaint in patients with pituitary adenoma. Psychiatric comorbidities in Cushing's disease are well known. However recent studies showed HRQoL reduction and psychiatric symptoms in patients with pituitary disease with or without hormonal excess. Aim of this study is to analyze HRQoL, psychiatric symptoms and neurocognitive functions in patients with pituitary adenomas, with either Cushing's disease or non-functioning pituitary adenoma (NFPA) before and after surgery.

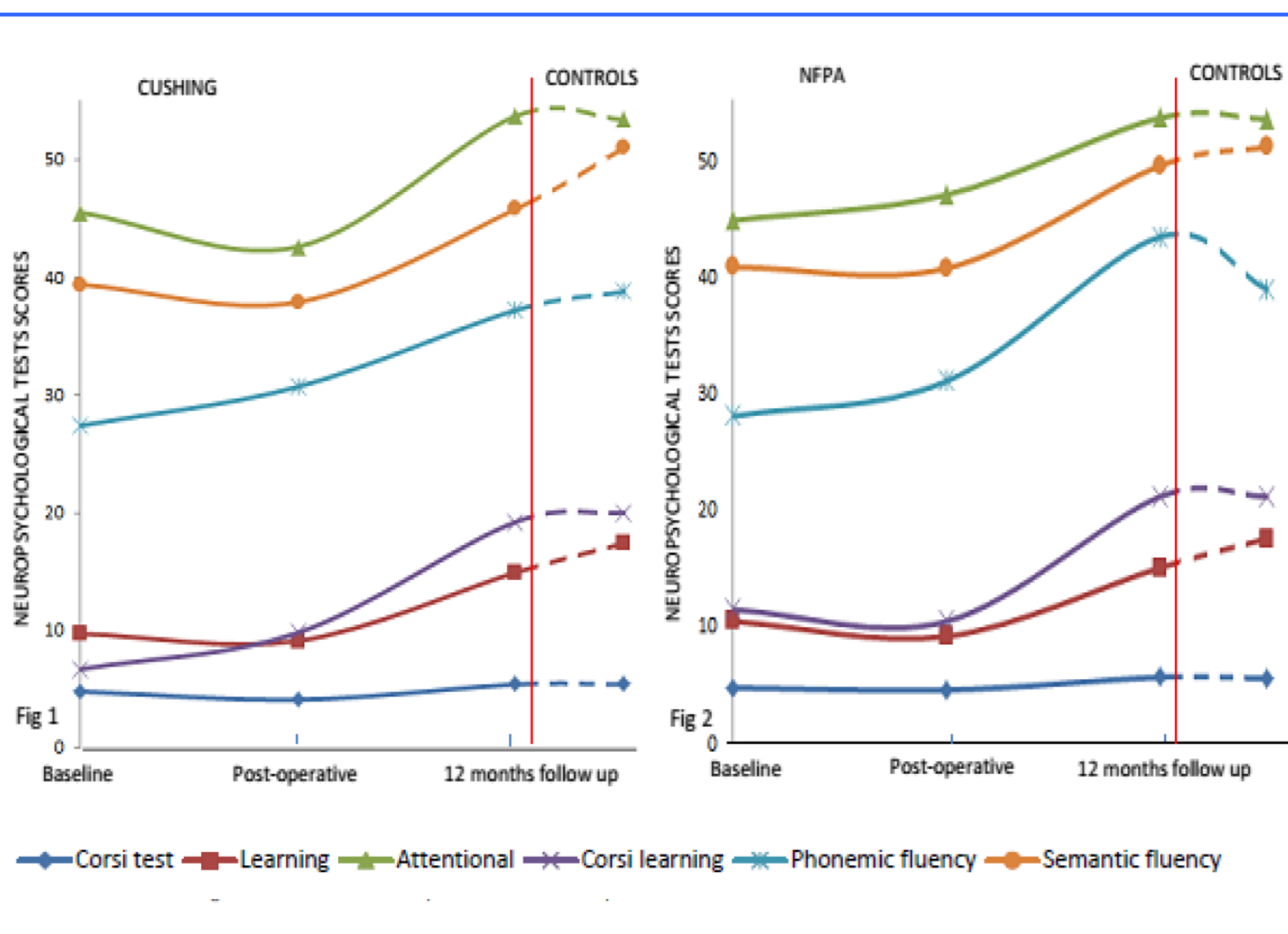
## MATERIALS AND METHODS

Through three validated questionnaires (SF-36, BDI-II, MMPI-II) and an interview with a psychologist, we assessed HRQoL, psychiatric symptoms and neurocognitive functions in 20 adult patients (age 49.6±11.4, M/F=12/8) harboring pituitary tumors (10 Cushing's disease and 10 NFPA, macro/micro=12/8). We conducted a baseline measurement before transphenoidal surgery as well right after and after 12 months. All Cushing's patients were in remission at the follow-up visit. Pituitary deficiencies, when present, were adequately substituted. 20 healthy subjects, age and sex-matched, were analyzed as controls at baseline.

## RESULTS

Regarding HRQoL, patients with NFPA did not show significant differences compared to controls. On the contrary, patients with Cushing's disease had significantly lower HRQoL than NFPA and controls in all scales of SF-36 questionnaire, both at baseline and at follow-up. At follow-up NFPA patients showed an improvement in all scales while patients with Cushing improved only in "Role Physical" and "General Health" ones. Furthermore, BDI-II and MMPI-II scales showed a significant increase of depression (p=0,045) and social inversion (p=0,031) in the Cushing's group. (Table 1)

TEST	CUSHING BASELINE	12 MONTHS	NFPA BASELINE	12 MONTHS	CONTROLS
<b>SF36</b>					
Physical	86.5(18.2) §	58.8(16.9) * §	82.5(18.5)	85.0(17.2)	90.0(16.9)
Role physical	40.6(24.1) * §	44.4(28.0) * §	74.8(21.0)	75.0(20.0)	95.0(17.4)
General health	54.0(22.2) *	60.5(20.0) *	52.2(15.7)	64.8(15.7)	80.6(13.7)
Social	68.8(18.0) * §	58.3(18.8) * §	59.3(28.8)	89.0(14.0)	92.3(11.8)
<b>BDI</b>					
Depression	14.7(9.8) * §	10.6(11.0) * §	6.7(4.5)	3.4(3.5)	4.8(3.9)
<b>MMPI</b>					
Hypochondriasis	55.7(11.1)	61.1(8.1)	63.8(5.3)	60.0(6.8)	55.8(7.3)
Depression	59.7(5.1)	63.8(11.6) * §	56.4(7.1)	54.1(9.0)	53.0(8.6)
Hysteria	49.1(6.9)	52.7(9.9)	52.4(5.1)	52.8(7.6)	53.0(9.3)
Hypomania	50.2(16.1)	46.4(5.9)	47.3(9.0)	44.4(10.9)	50.4(10.7)
Social inversion	63.7(7.6)	59.0(6.9) * §	56.0(6.6)	51.1(9.0)	51.6(7.6)



**Table 1**= Means (±SD) for quality of life, mood and personality tests (\* = p<0,05 vs controls; § = p<0,05 vs NFPA)

Lastly, both groups of patients, without any difference, showed a significant impairment in all neurocognitive functions tests at baseline compared to controls. At follow up, though, the difference had disappeared. (Fig 1 and 2)

**Figure 1 and 2** = neurocognitive performances for Cushing (1) and NFPA (2) at baseline, postoperative and 12 months follow up compared to controls.

## CONCLUSIONS

According to the literature, this study confirms that Cushing's disease leads to a large impact on HRQoL and psychiatric comorbidities, with significant improvement after treatment but without a complete remission, probably due to irreversible changes in neural function. Interestingly, however, neurocognitive impairment is equally present in all patients with pituitary tumors, independently of hormone secretion.

## REFERENCES

- Johnson MD**, Woodburn CJ, Vance ML. Quality of life in patients with a pituitary adenoma. *Pituitary*. 2003 Sep; 6(2):81-7.
- Milian M**, Honegger J, Gerlach C, Psaras T. Health-related quality of life and psychiatric symptoms improve effectively within a short time in patients surgically treated for pituitary tumors—a longitudinal study of 106 patients. *Acta Neurochir*. 2013 Sep;155(9):1637-45
- Peace KA**, Orme SM, Sebastian JP, Thompson AR, Barnes S, Ellis A, Belchets PE. The effect of treatment variables on mood and social adjustment in adult patients with pituitary disease. *Clin. Endocrinol (Oxf)*. 1997 Apr;46(4):445-50.
- Psaras T**, Milian M, Hattermann V, Gerlach C, Honegger J. Executive functions recover earlier than episodic memory after microsurgical transsphenoidal resection of pituitary tumors in adult patients—a longitudinal study. *Journal of Clinical Neuroscience*. 2011 Oct; 18(10): 1340–1345