

# Macroprolactinemia:

## prevalence and clinical characteristics in a cohort of hyperprolactinemic patients assessed for macroprolactinemia

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### Introduction

Macroprolactin is a collective term for a heterogenous group of high molecular mass forms of prolactin with minimal bioactivity *in vivo*.

### Objective:

To determine prevalence of macroprolactinemia (macroPRL) and clinical characteristics of patients with hyperprolactinemia (hyperPRL) who underwent assessment for macroPRL in Endocrinology outpatient clinic.

### Methods

We reviewed the medical records of 54 patients who were evaluated for macroPRL between April 2010 – October 2015. MacroPRL was evaluated by PEG serum precipitation (prolactin recovery  $\leq$  40% - macroPRL, 40-60% - inconclusive,  $\geq$ 60% - absence of macroPRL).

### Results

Fifty four patients (49 women; 5 men) underwent assessment for macroPRL: 21(38,9%) had macroPRL, 29 (53,7%) monomeric hyperPRL and 4 (7,4%) were not conclusive (Table 1).

Factor	Monomeric prolactin N=29	Macroprolactin (N=21)
Age* (yr)	42 (21-90)	39 (23-60)
Sex, no. (%)		
Men	2 (7)	3 (14)
Women	27 (93)	18 (86)
Total prolactin* (ref.range 3,46-19,40 ng/mL) (min.-max.)	76 (28-281)	82 (25-283)
Monomeric prolactin* (ng/mL) (min.-max.)	76 (18-297)	10 (2-21)
Prolactin recovery* (%) (min.-max.)	97 (63-142)	17 (1-39)

Table 1

\* Mean values

Among premenopausal women with macroPRL the most common complaints were: galactorrhea (23,5%), menstrual irregularities (29,4%), infertility (29,4%), while among those with true hyperPRL they were found in 45%, 50%, and 15% respectively. Some of the patients presented more than one symptom. No symptoms were reported in 22,2% of patients with macroPRL and 14,8% with true hyperPRL.

Three male patients had macroPRL and symptoms: erectile dysfunction, infertility or galactorrhea. Two men with true hyperPRL presented erectile dysfunction with gynecomastia and headaches with visual disturbances (Table 2).

Presenting Complaints		Monomeric prolactin, Number of patients	Macroprolactin, Number of patients
Women	Galactorrhea	9	4
	Menstrual irregularities	10	5
	Infertility	3	5
	Headaches	2	0
	No symptoms	1	3
	No information	1	1
	Menopause	7	1
Men	Erectile dysfunction	1	1
	Infertility	0	1
	Galactorrhea	0	1
	Headaches/visual disturbances	1	0

Table 2

Six patients with macroPRL had performed pituitary image studies before assessment of macroprolactin: 1 microadenoma with deviation of the pituitary stalk and 3 not conclusive. Twenty two patients with true hyperPRL underwent image studies: 7-normal findings, 8-microadenoma, 2-macroadenoma, 4-not conclusive, 1-extra-pituitary infrasellar lesion. Those who had macroadenoma or other findings on computed tomography were evaluated by magnetic resonance (Table 3).

Imaging results	Study performed	Monomeric prolactin		Macroprolactin	
		Computed tomography	Magnetic resonance	Computed tomography	Magnetic resonance
Normal		3	4	0	2
Microadenoma		0	8	0	1
Macroadenoma		1	2	0	0
Possible microadenoma / not conclusive		1	3	1	2
Other		1	1	0	0

Table 3

### Comments

In our study high prevalence of macroPRL (38,9%) was observed. Symptoms were common in macroPRL and true hyperPRL groups and the number of asymptomatic patients was similar. It confirms that it is not possible to distinguish macroPRL from true hyperPRL on the basis of clinical characteristics and laboratory screening is required. Assessment for macroPRL should be a part of initial evaluation of hyperPRL, not only reserved to asymptomatic patients. If macroPRL is not recognized it results in misdiagnosis, unnecessary imaging and treatment.