

Prolactin and Galactorrhea
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- 1) Which of these hormones are required for normal breast development and lactation?
 - a) Growth hormone/IGF-1 yes or no
 - b) Estrogen yes or no
 - c) Progesterone yes or no
 - d) Cortisol yes or no
 - e) Prolactin yes or no
 - f) Oxytocin yes or no

- 2) Which of the following cause hyperprolactinemia? (There may be more than one)
 - a) Sellar tumors which increase dopamine secretion
 - b) Lactotroph resistance to dopamine (idiopathic hyperprolactinemia)
 - c) Macroprolactinemia
 - d) Polycystic ovarian disease
 - e) Hypothyroidism
 - f) Chronic renal failure
 - g) Verapamil

- 3) T or F: A prolactin level between 50 and 200 is usually caused by a pituitary prolactinoma and, therefore, a pituitary MRI must be done.

- 4) T or F: The prolactin level is closely correlated to the size of the prolactinoma and, therefore, if a patient has a normal prolactin level (either during screening or following therapy), it can be assumed that there is no significant prolactin secreting tumor present.

- 5) T or F: Dopamine agonists are only effective in treating galactorrhea caused by prolactinomas.

- 6) T or F: Surgery is the treatment of choice for prolactinomas.

- 7) T or F: Tumors in men are more invasive and show histologic evidence of more rapid growth.

- 8) T or F: Up to 50% of women and 35% of men with prolactinomas have galactorrhea.

- 9) T or F: Bone density is reduced in both men and women as a result of hyperprolactinemia-induced sex steroid deficiency.

- 10) T or F: Prolactin is elevated in up to 50% of patients with acromegaly.

Table 8–12. Etiology of Hyperprolactinemia

Physiologic	Catecholamine depleters
Pregnancy	Reserpine
Lactation	Cholinergic Agonists
Stress	Physostigmine
Sleep	Antihypertensives
Coitus	Labetolol
Exercise	Reserpine
Pathologic	Verapamil
Hypothalamic-Pituitary Stalk Damage	H₂ Antibistamines
Tumors	Cimetidine
Craniopharyngioma	Ranitidine
Suprasellar pituitary mass extension	Estrogens
Meningioma	
Dysgerminoma	
Hypothalamic metastases	Oral Contraceptives
Granulomas	
Infiltrations	Oral Contraceptive Withdrawal
Rathke's cyst	
Irradiation	Anticonvulsants
Trauma	Phenytoin
Pituitary stalk section	Anesthetics
Suprasellar surgery	
Pituitary	Neuroleptics
Prolactinoma	Chlorpromazine
Acromegaly	Promazine
Macroadenoma (compressive)	Promethazine
Idiopathic	Trifluoperazine
Plurihormonal adenoma	Fluphenazine
Lymphocytic hypophysitis or parasellar mass	Butaperazine
Macroprolactinemia	Perphenazine
Surgery	Thiethylperazine
Trauma	Thioridazine
Systemic Disorders	Haloperidol
Chronic renal failure	Pimozide
Polycystic ovarian disease	Thiothixene
Cirrhosis	Molindone
Pseudocyesis	Opiates and Opiate Antagonists
Epileptic seizures	Heroin
Cranial radiation	Methadone
Chest—neurogenic chest wall trauma, surgery, herpes zoster	Apomorphine
Pharmacologic	Morphine
Neuropeptides	Antidepressants
Thyrotropin-releasing hormone	Tricyclic antidepressants
PRL-releasing peptide	Chlorimipramine
Drug-Induced Hypersecretion	Amitriptyline
Dopamine receptor blockers	Selective serotonin re-uptake inhibitors
Phenothiazines: chlorpromazine, perphenazine	Fluoxetine
Butyrophenones: haloperidol	
Thioxanthenes	
Metoclopramide	
Dopamine synthesis inhibitors	
α -Methyldopa	

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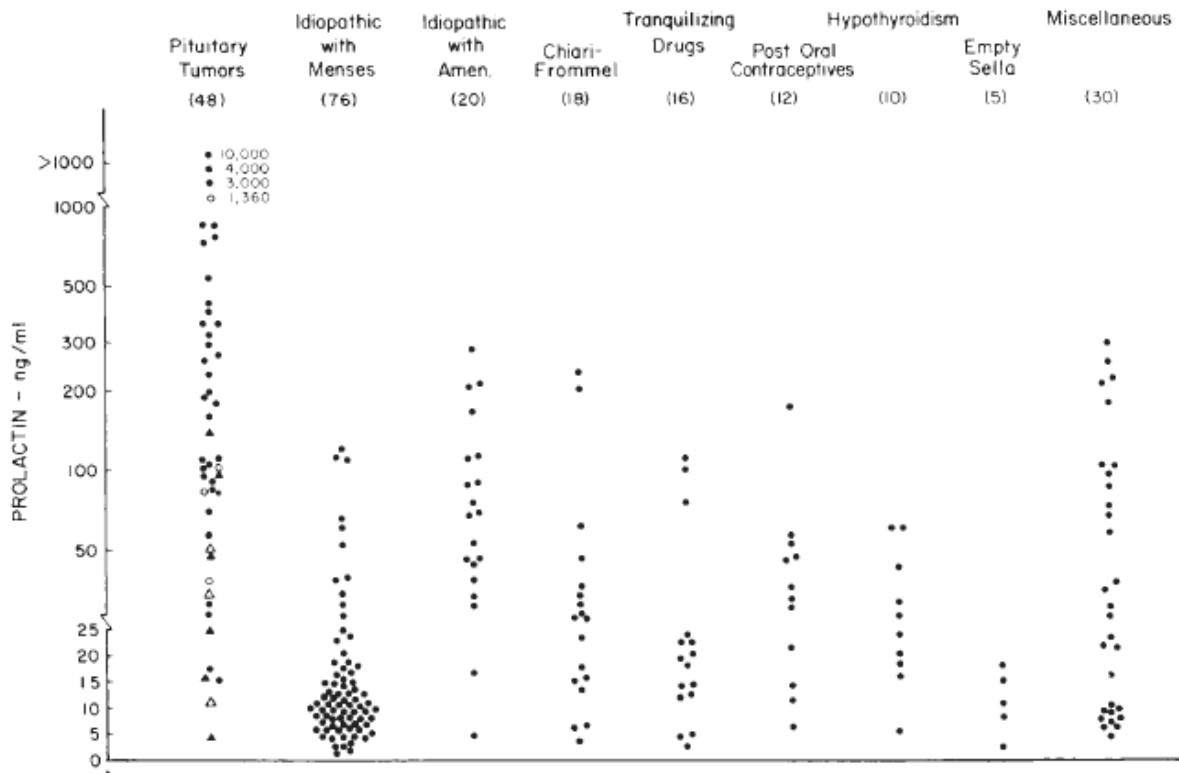


Figure 8-23. Prolactin levels in 235 patients with galactorrhea of various causes. Triangles denote patients with acromegaly; open circles or triangles denote patients studied after radiotherapy or surgery. (From Kleinberg DL, et al. Galactorrhea: a study of 235 cases including 48 with pituitary tumors. N Engl J Med 1977, 296:589-600.)

Table 8-13. Signs and Symptoms of Prolactinomas

Signs and Symptoms Associated with Tumor Mass	Signs and Symptoms Associated with Hyperprolactinemia
Visual field abnormalities	Amenorrhea, oligomenorrhea, primary amenorrhea, infertility
Blurred vision or decreased visual acuity	Decreased libido, impotence, premature ejaculation, erectile dysfunction, oligospermia
Symptoms of hypopituitarism	
Headaches	Galactorrhea
Cranial nerve palsies	
Pituitary apoplexy	Osteoporosis
Seizures (temporal lobe)	
Hydrocephalus (rare)	
Unilateral exophthalmos (rare)	

Answers:

1) All of these hormones except cortisol are required

2) (a) is wrong because sellar lesions REDUCE dopamine which then removes the inhibition to prolactin secretion.

3) False: Most prolactinomas produce serum prolactin levels >200 . Therefore, a level <200 does not REQUIRE an MRI but an MRI may be done if the clinical situation warrants it. Most patients with a prolactin between 25 and 200 have other causes of hyperprolactinomas.

4) True: Except in patients with macroprolactinemia and some patients with very large tumors. Patients with macroprolactinemia have very high measured prolactin levels and are totally asymptomatic because the prolactin is non-functional. This problem is usually found when a "screening" prolactin is done for headache or other non-specific symptoms and the prolactin comes back high. Macroprolactinemia can be identified in the lab by precipitating the plasma with PEG.

Occasionally patients with large tumors and very high prolactin levels have "low" measured prolactin levels because of assay interference. This situation usually arises when a patient with a large pituitary tumor is being investigated to determine whether the tumor is secreting anything or is interfering with pituitary function. This condition can be identified by simply doing serial dilutions of the serum.

5) False: Dopamine agonists can be effective in many conditions that cause galactorrhea, even if the prolactin is not elevated.

6) False: Dopamine agonists are the treatment of choice.

Medical management (cabergoline [1-2/wk], bromocriptine [1-3/day]) typically effective

Radiation effective but takes years; can radiate while treating medically

Surgical success inversely related to size; high recurrence at all sizes. Usually only used for medical failures, esp with progressive symptoms. May be considered for micro-adenomas, esp if they are growing.

7) True

8) True

9) True

10) True