Silent Pituitary Adenomas

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KEYWORDS

- Nonfunctioning pituitary adenoma • Silent pituitary adenoma
- Clinically silent pituitary adenoma

KEY POINTS

- Nonfunctioning, or silent, pituitary adenomas can arise from any anterior pituitary cell type and may be "clinically silent" or "totally silent."
- Gonadotroph and null-cell adenomas are the most prevalent type of silent pituitary adenomas.
- Silent adenomas that are associated with neurologic defects require transsphenoidal surgery; radiation therapy may be used to treat residual or recurrent disease.

INTRODUCTION

Pituitary adenomas are uncommon. A cross-sectional study from the United Kingdom found that the prevalence of pituitary adenomas was 77.6 per 100,000 people.[1] They can arise from any anterior pituitary cell type. Some pituitary adenomas cause clinical manifestations related to the excessive secretion of their hormonal products, whereas others are nonfunctioning or "silent" (**Box 1**). Although they are common among pituitary adenomas, the annual incidence of nonfunctioning pituitary adenomas is only approximately 1.5 per 100,000 people.[2]

TYPES OF SILENT PITUITARY ADENOMAS

Pituitary adenomas are classified based on the anterior pituitary cell type of origin (**Table 1**).

- Adenomas can therefore be lactotroph, somatotroph, corticotroph, gonadotroph and thyrotroph. Those that do not stain for any hormone by immunocytochemistry

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Box 1
Classification of pituitary adenomas based on the combination of immunocytochemistry, biochemical testing, and clinical findings

- Classic: Pituitary adenomas that secrete hormonal products in sufficient quantities to cause characteristic signs and symptoms related to the hormone excess.
- Subtle: Pituitary adenomas that secrete hormonal products that produce mild clinical manifestations related to the hormone excess.
- Clinically silent: Pituitary adenomas that can be classified by immunocytochemistry and secrete hormonal products that can be detected by biochemical testing but do not cause clinical signs or symptoms.
- Totally silent: Pituitary adenomas that can be classified by immunocytochemistry as arising from a specific anterior pituitary cell type but do not secrete a sufficient amount of their hormonal products to affect the serum concentration or urine excretion.

are called null cell, and those that stain for multiple hormones are called plurihormonal.

- Any type of pituitary adenoma can be silent, but a larger percentage of gonadotroph and null-cell adenomas and smaller percentage of lactotroph, somatotroph, and corticotroph are silent.

Gonadotroph adenomas account for 25% to 35% of pituitary adenomas overall[3–5] and 43% to 64% of silent adenomas.[3,6] Null-cell adenomas are nearly as common.[3] Clinically silent somatotroph adenomas account for up to 9%[4] and clinically silent corticotroph adenomas 2.9% to 5.7% of pituitary adenomas in surgical series.[7,8] Silent lactotroph adenomas occur in 1% to 2%[3] and silent thyrotroph adenomas less than 1%.[3,6,9] About 2% are plurihormonal.[3]

CLINICAL PRESENTATIONS

Silent pituitary adenomas are often detected as an incidental finding on MRI or when patients experience neurologic symptoms related to mass effect (**Table 2**). Pituitary hormone deficiencies occur in up to two-thirds[10]; however, in the authors' experience, they are not usually the presenting findings.

Progression of a nonfunctioning pituitary adenoma to one that is clinically apparent may occur. Several reports have described patients with known silent corticotroph adenomas who subsequently develop Cushing disease.[8,11–13]

Table 1
Types of silent pituitary adenomas based on immunocytochemistry

Adenoma Type	Immunostaining
Null cell	None
Gonadotroph	FSH, LH, α-subunit
Thyrotroph	TSH
Corticotroph	ACTH
Somatotroph	GH
Lactotroph	Prolactin
Plurihormonal	Multiple hormones

Abbreviations: ACTH, adrenocorticotropic hormone; FSH, follicle-stimulating hormone; GH, growth hormone; LH, luteinizing hormone; TSH, thyroid-stimulating hormone.