



PITUITARY MICROADENOMA PRESENTING WITH VARIED ENDOCRINE MANIFESTATIONS: A CASE SERIES OF FOUR FEMALE PATIENTS AGED 19–39 YEARS

Radio-Diagnosis

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ABSTRACT

Pituitary microadenomas are small, generally non-malignant lesions under 10 mm in size, arising in the anterior pituitary. Despite their small size, these lesions may cause a broad range of clinical manifestations depending on their hormonal activity or mass effect. Magnetic resonance imaging (MRI) is instrumental in diagnosis, often demonstrating hypo- or isointense lesions on T1-weighted sequences with minimal or delayed enhancement. This case series highlights Four patients presenting with distinct symptoms, including amenorrhea, galactorrhea, and visual deficits, underscoring the critical role of MRI in early identification and management.

KEYWORDS

Pituitary microadenoma, MRI, prolactinoma, hormonal imbalance, sellar lesion.

INTRODUCTION

Pituitary microadenomas are pituitary tumors less than 10 mm in diameter, most commonly found in the anterior lobe. They may be functioning (hormone-secreting) or non-functioning, with prolactin-secreting microadenomas (prolactinomas) being the most prevalent [1]. Depending on the hormonal profile, clinical symptoms vary from menstrual irregularities and infertility in women to decreased libido and gynecomastia in men [2]. MRI is the preferred imaging modality, providing high-resolution views of the sellar region and helping differentiate microadenomas from normal gland tissue [3, 4].

Here, We present a case series of four female patients—aged 19, 20, 23, and 39 years—each diagnosed with pituitary microadenoma using 3T MRI, highlighting the spectrum of imaging characteristics and clinical presentations..

Case 1

A 39-year-old female presented with secondary amenorrhea and occasional headaches for the past 6 months. She had normal pubertal development and no prior menstrual irregularities. There was no galactorrhea or visual complaints. Hormonal profile showed elevated serum prolactin (115 ng/mL).



Fig. 1: Axial T1WI post contrast Image of case no-1

MRI brain with pituitary protocol demonstrated a well-defined round to oval lesion (blue arrow) measuring 6.3 mm in diameter located in the anterior pituitary gland. The lesion appeared hypointense and non-enhancing on dynamic contrast-enhanced T1-weighted images. There

was mild rightward deviation of the pituitary stalk, with the optic chiasm appearing normal (fig-1). Findings suggestive of a left-sided pituitary microadenoma.

Case 2

A 20-year-old female presented with complaints of irregular menstrual cycles and recent weight gain. She denied visual symptoms, galactorrhea, or headaches. Hormonal assessment revealed borderline low estrogen and mildly raised serum prolactin (45 ng/mL).



Fig. 2: Axial T1WI post contrast Image of case no-2

MRI of the brain with pituitary protocol revealed a small nodular lesion (blue arrow) measuring approximately 0.39 × 0.37 cm, located in the right lobe of the anterior pituitary gland. The lesion was non-enhancing on dynamic contrast sequences. The suprasellar and parasellar regions appeared normal, and there was no optic chiasm involvement (fig-2). Features consistent with a pituitary microadenoma.

Case 3

A 19-year-old female presented with mild visual disturbances and irregular periods for the past few months. Visual field testing revealed subtle temporal field defects. Serum prolactin was markedly elevated (240 ng/mL).



Fig. 3: Axial T1 WI post contrast Image of case no-3

MRI brain revealed a small, well-defined lesion (blue arrow) measuring 2 mm in the anterior pituitary gland. The lesion appeared hypointense and non-enhancing on dynamic contrast-enhanced images. The pituitary gland was normal in size, and there was no suprasellar extension, although it was abutting the undersurface of the optic chiasm (fig-3). Findings suggestive of a microadenoma.

Case 4

A 23-year-old female presented with menstrual irregularities and chronic fatigue. No visual symptoms or galactorrhea were reported. Hormonal evaluation showed slightly elevated prolactin levels. Fig-4



Fig. 4: Axial T1 WI post contrast Image of case no-4

MRI of the brain revealed a well-defined nodular lesion (blue arrow) measuring 4.2 mm, located in the anterior pituitary gland. The lesion appeared iso- to hyperintense on T1, T2, and FLAIR sequences, with no diffusion restriction. On dynamic contrast-enhanced imaging, a focal non-enhancing lesion was seen (fig-4). Findings are consistent with a pituitary microadenoma.

DISCUSSION

Pituitary microadenomas are small lesions of the sellar region that are often discovered incidentally or during endocrine evaluations [1]. Among hormone-secreting types, prolactinomas are the most common, particularly in women of reproductive age, and can manifest as menstrual disturbances, infertility, or milk secretion. In contrast, men may exhibit vague symptoms such as decreased libido, which can delay recognition [2].

High-resolution MRI—especially with dynamic contrast protocols—is the preferred imaging method to evaluate these lesions [3, 4]. Microadenomas frequently appear darker compared to normal pituitary tissue on early T1-weighted post-contrast sequences and show delayed or reduced enhancement. This approach allows detection of microadenomas, many of which are under 5 mm in size [3, 5].

In our series, patient presentations varied from isolated hormonal abnormalities to vision deficits. MRI was essential in confirming diagnosis and guiding subsequent endocrine care, highlighting the importance of integrating clinical and imaging findings [5, 6].

CONCLUSION

Pituitary microadenomas, although small in size, can produce notable clinical manifestations due to hormone secretion or local compressive effects. Prompt recognition through thorough clinical evaluation,

hormonal testing, and MRI plays a key role in ensuring accurate diagnosis and effective treatment. As shown in this case series, MRI proves essential in detecting and evaluating these lesions, supporting informed therapeutic decisions—even in settings with limited medical resources [6].

REFERENCES:

1. Melmed S. Pathogenesis and diagnosis of pituitary tumors. *Nat Rev Endocrinol.* 2011; 7(5):257–266.
2. Schlechte JA. Clinical practice. Prolactinoma. *N Engl J Med.* 2003; 349(21):2035–2041.
3. Bonneville JF, Cattin F, Bonneville F. Magnetic resonance imaging of pituitary adenomas. *Eur Radiol.* 2005; 15(3):543–548.
4. Kucharczyk W, et al. Detection of pituitary microadenomas: comparison of dynamic contrast-enhanced and spin-echo MR imaging techniques. *Radiology.* 1994; 190(1):123–128.
5. Castillo M. Imaging of pituitary adenomas: current concepts. *Neuroimaging Clin N Am.* 1999; 9(1):109–123.
6. Kovacs K, Horvath E. Pituitary microadenoma: historical and modern perspectives. *Endocrine Pathology.* 2002; 13(1):1–8.