

Pituitary microadenoma diagnosis

[pituitary neuroendocrine tumor diagnosis](#).

Radiographic features

Plain radiograph and CT

Historically, before the advent of MRI, the pituitary was imaged with lateral skull x-rays (looking for remodeling of the pituitary fossa), and later with CT. Although CT was able to detect up to 80-90% of microadenomas between 5-10 mm in size, it was a highly specialized technique, radiologist-dependent, and had difficulty in identifying smaller nodules

MRI

[Pituitary microadenoma Magnetic resonance imaging](#)

Angiography (DSA)

Inferior petrosal sinus sampling Inferior petrosal sinus sampling is now reserved for one of two situations where patients are suspected of having a pituitary microadenoma, despite normal MRI:

confirm the presence of a microadenoma, rather than a non-pituitary source ⁴; this is especially the case of Cushing disease, as there are many sources of extra-pituitary ACTH (e.g. some lung cancers) lateralize the microadenoma, to aid in surgical exploration Differential diagnosis

With the use of MRI increasing, the discovery of such incidental microadenomas will become more of a clinical problem.

Various techniques have been attempted to increase the yield of [Pituitary magnetic resonance imaging](#) for localization of pituitary microadenomas in corticotropin (ACTH)-dependent Cushing's syndrome (CS).

Dynamic magnetic resonance (MR) imaging for pituitary microadenomas is usually performed in 2-dimensional (2D) multi-slice method which used coronal T(1)-weighted imaging with turbo spin echo (SE) method. However, on MR images using 2D multi-slice method, the detectability of small lesions between slices may decrease.

VI-SGE MR sequence was better for localization of pituitary microadenomas particularly when DC-SE MR sequence is negative or equivocal and should be used in addition to DC-SE MR sequence for the evaluation of ACTH-dependent CS ¹.

[Dynamic MR imaging](#) which used coronal T(1)-weighted imaging with 3D turbo SE method is feasible by utilizing the reduction of TR and low refocusing flip angle, as well as the combination of parallel imaging and radial sampling ².

1)

Kasaliwal R, Sankhe SS, Lila AR, Budyal SR, Jagtap VS, Sarathi V, Kakade H, Bandgar T, Menon PS, Shah NS. Volume interpolated 3D-spoiled gradient echo sequence is better than dynamic contrast spin echo sequence for MRI detection of corticotropin secreting pituitary microadenomas. Clin Endocrinol (Oxf). 2013 Jun;78(6):825-30. doi: 10.1111/cen.12069. Epub 2013 Apr 6. PubMed PMID: 23061773.

2)

Ogawa M, Matsumura Y, Matsumoto T, Tsuchihashi T, Tsubakiyama S. [Study of dynamic pituitary magnetic resonance imaging using three-dimensional turbo spin echo method at 3 Tesla MRI]. Nihon Hoshasen Gijutsu Gakkai Zasshi. 2012;68(3):231-9. Japanese. PubMed PMID: 22449898.

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