

Original Article

'Empty sella' on routine MRI studies: An incidental finding or otherwise?



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ABSTRACT

Background: Empty sella (ES) has been regarded as an incidental finding. Recently, there have been studies documenting association of ES with hormonal and non-hormonal abnormalities. To detect the prevalence of empty sella in routine MRI brain study and to find associations with other diseases.

Methods: A retrospective study was carried out for patients undergoing MRI brain studies in the radiology department of a teaching institution. Patients with ES formed the study group. The rest formed the baseline population. Presence of nine select variables, viz. hormonal disturbances, headache, sensorineural hearing loss, seizures, vertigo, psychiatric disorders, visual disturbances, ataxia and raised intracranial tension, was analyzed amongst the study group, as well as the baseline population. Association of ES and the select variables was analyzed by determining means and proportions and using Chi-square test.

Results: During the study period, a total of 12,414 patients underwent MRI brain studies at our centre. ES was found in 241 (1.94%) patients. The proportion of patients in the ES and non-empty sella groups for each of the variables were as follows: hormonal disturbances (3.31% vs 0.56%, P = .000), headache (8.3% vs 7.4%, P = .596), SNHL (3.7% vs 1.3%, P = .0010), seizure (6.2% vs 13%, P = .002), vertigo (4.6% vs 1.6%, P = .000), psychiatric disorders (4.6% vs 1.3%, P = .000), visual disturbances (2% vs 1.1%, P = .166), ataxia (1.7% vs 1.2%, P = .519) and raised ICT (2% vs 0.5%, P = .002).

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Conclusion: Hormonal disturbances, psychiatric disorders, raised ICT and SNHL have been found to be more often associated with ES as compared to general population.

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Introduction

Empty sella (ES) is a condition where the sella turcica (ST) is partially or completely filled with cerebro-spinal fluid (CSF) and the pituitary gland is compressed against the sellar wall with or without enlargement of the ST. Since its initial descriptions in post-mortem studies and radiographs, the condition is being increasingly recognized in day-to-day radiology practice due to the advent of MRI. ES with a normal-sized ST, detected during MRI study of the brain, is often disregarded as an incidental finding without giving any clinical significance. However, since its initial description, various endocrine as well as non-endocrine abnormalities have been described in association with ES.¹⁻⁶ Although various associations have been described with ES, the exact significance is not clear. ST and pituitary gland are well visualized in MRI, particularly in sagittal and coronal planes. For a long time since now, it has been a routine practice in most imaging centres and institutes including ours to assess the ST and pituitary gland during MRI study of the brain and comment on it as a part of brain reporting protocol. In this single-centre cross-sectional analysis with retrospective data collection, we have evaluated various associations of ES in patients who have undergone MRI brain for a variety of clinical conditions.

Materials and methods

Setting

The study was conducted at the department of Radiodiagnosis and Imaging of a tertiary care hospital and teaching institution.

Study population

The study population consisted of all patients who underwent MRI of brain for various indications at the MRI centre of our institute from April 2006 to March 2015. Patients who were diagnosed to have ES in the MRI report formed the study group.

Exclusion criteria

(1) MRI reports that did not mention about the pituitary gland,(2) Patients of pituitary gland tumours or surgery,(3) MRI reports without any clinical details.

Data acquisition

All brain MRI reports in the study period were first identified by searching in the MRI report database with the keyword 'brain' (Fig. 1). These patients formed the baseline population.



Fig. 1 - Flowchart showing selection of patients with empty sella for the study.

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