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Could Elevated Intracranial Pressure Be Associated with Pituitary Dysfunction?

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Purpose

Idiopathic intracranial hypertension (IIH) is increasingly recognized by characteristic MRI findings such as papilledema, transverse sinus stenosis, Partial empty sella among other imaging findings. Similar imaging features have been reported in patients with pituitary dysfunction such as prolactinoma. This study aims to present a series of patients demonstrating concurrent pituitary dysfunction and MRI findings of IIH, suggesting a potential radiologic and pathophysiologic association between these entities.

Materials and Methods

In this retrospective study, we detected 537 MRI scans with pituitary protocol between 2020 and 2025 at our institution. We reviewed 55 brain MRI examinations performed between 2020 and 2025 that included the report keywords: either “hyperprolactinemia” or "precocious puberty" and “partial empty sella” or “pseudotumor cerebri” or "intracranial hypertension". All studies were independently evaluated by a board-certified neuroradiologist (> 12 years of experience) and a neuroradiology fellow for imaging features consistent with IIH and documented pituitary dysfunction. Imaging markers of IIH included partially empty sella, papilledema, dilated Meckel’s caves, transverse sinus collapse, optic nerve sheath dilation (>0.6 cm), posterior globe flattening, among other imaging features.

Results

Out of the 55 patients identified, 10 (all female; age range 12–43 years) demonstrated both pituitary dysfunction, and MRI features of IIH. Diagnoses included hyperprolactinemia (n=9), and precocious puberty (n=1). All patients exhibited at least three MRI markers compatible with diagnosis of IIH by Friedman criteria.

Conclusion

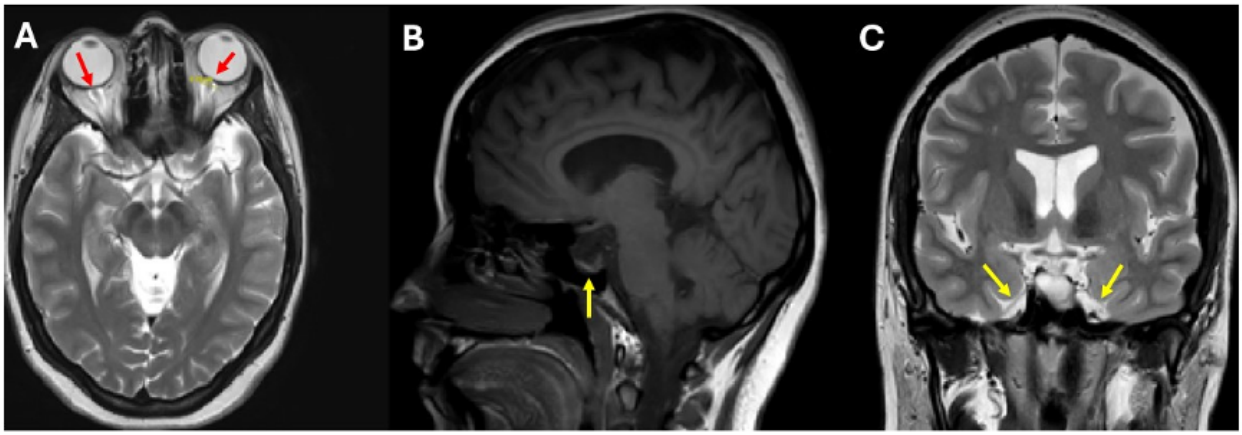
This series suggests a potential association between pituitary dysfunction and IIH. While causality remains uncertain, recognition of this overlap may enhance diagnostic accuracy and inform multidisciplinary management. Further prospective studies are warranted to clarify the underlying mechanisms and clinical implications.

References

Kamali A, Park ES, Lee SA, et al. Introducing the "Temporal Thumb Sign" in Pediatric Patients With New-Onset Idiopathic Seizures With and Without Elevated Cerebrospinal Fluid Opening Pressure. Pediatr Neurol 2023;140:52-58. DOI: 10.1016/j.pediatrneurol.2022.12.010.

Khalaj K, Jacobs MA, Kramer LA, et al. Incidence of temporal thumb sign in adult patients with idiopathic seizures with and without elevated opening cerebrospinal fluid pressure. Eur Radiol 2025;35(11):6633-6641. DOI: 10.1007/s00330-025-11499-z.

Figures



A 42 y/o F presenting with hyperprolactinemia and IIH. Brain MRI shows multiple imaging findings of elevated intracranial pressure (opening pressure of 40 cm H_2o) including the dilated optic nerve sheaths and flattening of the posterior globes (A), partial empty sella (B) and dilated and indentation of bilateral Meckel's caves (C).