Development of Empty Sella in Neurosarcoidosis: A Case Report

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Background

Sarcoidosis is a multisystem inflammatory disorder characterized by non-caseating granulomas. Central nervous system (CNS) involvement occurs in 5–15% of cases, most commonly affecting the leptomeninges, cranial nerves, hypothalamus, or pituitary gland. Sellar sarcoidosis is rare, occurring in <1% of patients, and often presents with neuroendocrine manifestations, such as diabetes insipidus, hypopituitarism, or hyperprolactinemia. We report a case of systemic sarcoidosis with pituitary involvement that progressed to partial empty sella, a rarely reported sequela.

Case Presentation

A 70-year-old woman with primary hypothyroidism on levothyroxine 100 µg/day was diagnosed with pulmonary sarcoidosis four years earlier. Initial workup:

- Chest CT: Mild diffuse interstitial changes and right upper lobe subsegmental atelectasis.
- Abdominal imaging: Focal liver lesions (2×2 cm).
- FDG-PET/CT: Increased uptake in lungs, liver, and pituitary gland.
- Bronchoscopy: Non-caseating granulomas, confirming sarcoidosis.

She was diagnosed with systemic sarcoidosis with probable pituitary involvement and started on prednisone (1 mg/kg/day) and methotrexate (10 mg weekly). Prednisone was tapered after one year.

Her levothyroxine dose was later reduced to 50 µg/day due to persistently suppressed TSH, initially thought to be due to over-replacement.

Management and Outcomes

One year later, she presented with weakness, fatigue, and anorexia for three weeks.

- Vitals: BP 110/80 mmHg with orthostatic hypotension, HR 70 bpm.
- Labs:
  TSH: 0.20 (0.5–5 mIU/L)
  FT4: 0.52 (5–12 µg/dL)
- Morning cortisol: 2.6 (5–25 µg/dL)

These findings indicated secondary hypothyroidism and adrenal insufficiency.

MRI pituitary showed partial empty sella, with cerebrospinal fluid compressing the pituitary gland against the sellar floor.

The levothyroxine dose was increased to 75 µg/day, and hydrocortisone 15 mg/day was initiated, resulting in marked clinical improvement.

Discussion

Pituitary sarcoidosis is rare but should be suspected in sarcoidosis patients with unexplained endocrine abnormalities. Granulomatous infiltration of the hypothalamic–pituitary axis can cause hypopituitarism, diabetes insipidus, or

hyperprolactinemia. Chronic inflammation may eventually lead to pituitary atrophy and empty sella formation, as seen in this case.

Diagnosis is challenging due to non-specific clinical and imaging findings. MRI is essential, while biopsy is reserved for selected cases.

Conclusions

This case highlights the rare evolution of pituitary neurosarcoidosis into an empty sella. Clinicians should monitor progressive endocrine dysfunction in sarcoidosis patients to ensure timely diagnosis and management.

Keywords

Neurosarcoidosis, Empty sella, Hypopituitarism, Sarcoidosis, Pituitary involvement