Development of Diabetic Ketoacidosis in a Patient with a Growth Hormone Secreting Macro-Adenoma and Suspected Pituitary Apoplexy

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Introduction

While acromegaly is the most common clinical sign of a growth hormone (GH) secreting pituitary adenoma, these tumors can be accompanied by multiple important metabolic changes. Acromegalic patients can develop varying levels of insulin resistance via the downstream effects of growth hormone on the insulin receptor and about 10% develop diabetes mellitus (DM). Rarely, the relative insulin deficiency in these patients can lead to diabetic ketoacidosis (DKA) characterized by hyperglycemia and metabolic acidosis. Although rapid deterioration in a patient with a known pituitary macro-adenoma (PMA) should lead to exclusion of more common etiologies such as pituitary apoplexy, DKA should also be considered in the appropriate context.

Methods

Case review of a 32-year-old previously healthy female patient with a newly diagnosed PMA after development of progressive vision loss who presented with acute clinical changes suspicious for pituitary apoplexy but was instead found to be in DKA.

Results

The patient presented one day prior to elective surgical intervention with sudden onset fatigue, nausea, vomiting, polydipsia and polyuria. CT scan of the brain showed a hyperdensity around the mass concerning for pituitary apoplexy. Laboratory studies were remarkable for elevated serum GH and IGF-1 with an otherwise normal pituitary panel, high anion gap metabolic acidosis, and elevated glucose. A diagnosis of DKA was made and treatment initiated with intravenous hydration, potassium, and insulin administration. MRI of the brain did not revealed any intracranial blood and pituitary apoplexy was eliminated from the differential diagnosis. The patient's condition improved with subsequent closure of the anionic gap.

Conclusions

In rare cases, DKA may be the initial presentation for a GH secreting macro-adenoma. Recognition, appropriate management, and differentiation of DKA from pituitary apoplexy requires prompt evaluation to achieve good outcomes.

Learning Objectives

By the conclusion of this session, participants should be able to:

1)Describe different metabolic changes seen by over production of Growth Hormone.

2)Recognize that DKA can be seen in rare cases with GH secreting macro-adenomas and can be seen even in the absence of diabetes mellitus.

3)Understand that the DKA and Pituitary apoplexy are included in the differential diagnosis of rapid deterioration in patients with GH secreting macro-adenoma.

References

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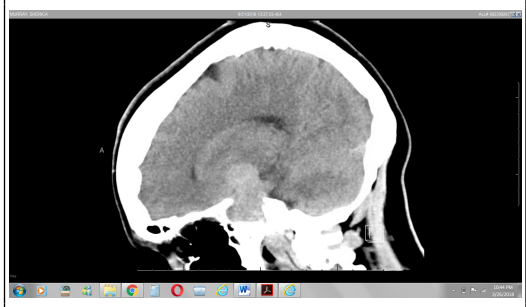
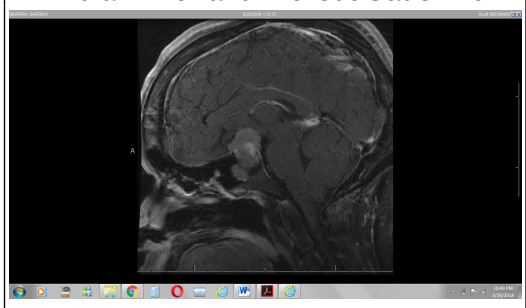
CT brain without Contrast



CT brain without Contrast: Shows a Sellar/Suprasellar lesion with areas of hyperdensities.

MRI brain with and without Gadolinium



MRI brain with and without Gadolinium. A large heterogeneous enhancing Sellar/Suprasellar lesion is seen.