Episodes 55 & 56

Episode 55: Dr. Sophia Hayes and Dr. Pooja Mehta from Brigham & Women's Hospital with Rabih (case presented by Dr. Stephanie Sherman)
A 59-year-old man with ESRD on emergency-only hemodialysis (due to his immigration status), depression, and hypothyroidism presented with one month of progressive leg swelling, exertional dyspnea, and orthopnea. CXR showed bilateral pleural effusions with an enlarged cardiac silhouette, and an EKG demonstrated sinus bradycardia with low voltage complexes. After undergoing dialysis for critical electrolyte abnormalities, he developed hypothermia and bradycardia. A thyroid stimulating hormone (TSH) level returned at > 100 mIU/L and he was diagnosed with myxedema crisis. He was treated with empiric glucocorticoids and thyroid supplementation, after which he experienced significant improvement.

Episode 56: Dr. Katherine McGee and Dr. Graham Peigh from Northwestern University with Reza (case presented by Dr. David Kudlowitz)
A 69-year-old man with metastatic melanoma currently being treated with checkpoint inhibitor immunotherapy presented after a brief loss of consciousness in the setting of 6 days of lightheadedness, nausea, and fatigue. Labs were notable for hyponatremia, low TSH and free T4, low AM cortisol, undetectable ACTH, and low luteinizing hormone. A brain MRI showed an enlarged and enhancing pituitary gland consistent with checkpoint inhibitor-induced hypophysitis.

Teaching points

- Myxedema crisis[1] (also known as "myxedema coma") is a life-threatening complication of hypothyroidism that is most commonly triggered by cessation of thyroid supplementation and acute infections. Clinical manifestations of myxedema crisis share two common etiologies:
    - Hypometabolism, which can lead to hypotension, bradycardia, and hypothermia, as well as constipation, fatigue, depression, and obtundation or coma.
    - Accumulation of glycosaminoglycans in soft tissues[2], which can lead to diffuse, non-pitting edema of the face and extremities (known as myxedema), as well as coarse hair/skin and macroglossia.
- In addition to bradycardia, low voltage EKG complexes[3] are another cardiac complication of myxedema crisis. They can arise from both thyroid hormone deficiency, which causes decreased cardiac contractility, and pericardial effusions[4], a potentially serious complication of myxedema crisis. Interestingly, hyponatremia[5], a common metabolic complication, is driven by the diminished cardiac output from severe thyroid hormone deficiency.
    - Checkpoint inhibitors[6] block downregulation of our natural immune system and, as a result, have a variety of autoimmune inflammatory side effects (known as immune related adverse events [IRAEs][7]). IRAEs can affect any organ system and most commonly involve the endocrine glands, GI tract, skin, and liver. While IRAEs generally occur within weeks to months of initiating treatment, they can occur at anytime, including after cessation of therapy.

Clinical Reasoning Pearl

Layering the "background" (information about *who* our patient is) on the "foreground" (our patient's syndrome) can help us consider etiologies of a patient's presenting symptoms that are less common, overall, but more common in those with certain background features.

<u>For example:</u>
Dr.'s McGee and Peigh layered background information (metastatic melanoma on immunotherapy) on the foreground data (loss of consciousness) and considered an autoimmune endocrinopathy – a rare cause of loss of consciousness, but a common complication of immunotherapy – early on in the case.

References

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