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DIAGNOSTIC DILEMMA : SPORADIC VS GENETIC CAUSES OF HYPOKALEMIC HYPERTENSION:

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We present a rare case of familial persistent hypokalemic hypertension

A 47-year-old female with a history of controlled diabetes presented with resistant hypertension. She had no symptoms on encounter, but family history was significant for uncontrolled hypertension. On exam, HR 90 bpm and BP 157/92. Physical exam was unremarkable. She was on losartan, hydrochlorothiazide, amlodipine. Chemistries showed hypokalemia 3.1mEq/l, creatinine 0.8 mg/dl, Urine potassium 50, and negative urine anion gap. Further workup revealed, Renin 2.2 , aldosterone 28 with PRA ratio of 13 and a repeat testing, off diuretics, confirmed the same. Imaging was unrevealing for renal artery stenosis and adrenal pathology. Workup for other secondary causes of hypertension was negative. She responded well to dietary modifications with high potassium, low sodium diet and adding Triamterene to existing BP regimen. Meanwhile, renal venous sampling, which was done in view of possible juxtaglomerular cell tumor, is in process at this time. If unrevealing, she will need genetic testing to rule out tubulopathies.

Secondary hyperaldosteronism (SHA) occurs due to the excess stimulation of the RAAS. It can be physiological or pathological. Apart from Renal artery stenosis, congestive heart failure and congestive pulmonale, other entities such as a renin-producing tumor in the juxtaglomerular cells must be entertained after exhausting the more common causes. High inactive Renin levels and immunoreactive-renin levels were suggestive of the diagnosis. Renal arteriogram was extremely useful in selective patients. PAC/ PRA ratio (Plasma aldosterone concentration/plasma renin activity) is a confirmatory test for primary hyperaldosteronism (PHA). Most studies support an elevated PAC/PRA (>30) and PAC (>20 ng/dl) levels with a sensitivity and specificity of over 90%.

However, a PAC/PRA ratio >20 and PAC >15 ng/dL were reported to be sufficient. In SHA, both PRA and PRC are increased, but PAC/PRA is less than PHA. The role of 24-hour urinary aldosterone is controversial. But it can be used to detect inappropriate potassium wasting (>30 mEq/day). This test is useful to rule out extrarenal tases and diuretic abuse in hypokalemia, specifically with mildly increased aldosterone levels.

Careful evaluation is needed for persistent HTN

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RISK FACTORS OF HYPOMAGNESEMIA IN SOLID ORGAN TRANSPLANTS:

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Abnormalities in magnesium are a common occurrence post solid organ transplants (STxs), particularly in kidney transplant (KTx) patients. Current studies trace most post-transplant cases of this hypomagnesemia to the use of certain medications, such as calcineurin inhibitors. Hypomagnesemia has shown to have the highest prevalence at around the second month, post-transplant. The effect of hypomagnesemia on the occurrence of cardiac arrythmias is one area that needs to be further studies.

An understanding of the prevalence and etiologies of hypomagnesemia will prepare health care providers on how to efficiently identify and manage this abnormality, which will lead to a decrease in hospitalizations. Comparing electrolyte abnormalities in different organ transplants, we believe, may better delineate the role anti-rejection medications play compared to the role of diminished organ function such as clearance.

We reviewed the electronic medical record data of 199 adult patients with STx, including 71 heart transplants (HTx), 72 liver transplants (LTx), and 56 KTx. The inclusion criteria consisted of patients aged >18 who were transplanted from 2019 to 2021. Data was collected on demographics, induction regimens, types of immunosuppression, anti-hypertensive medication use, magnesium supplementation and serum magnesium. Electrolyte values were recorded on post-transplant day 0, and 3 Months. A descriptive analysis was performed using “Chi-square” to compare the prevalence of the electrolyte abnormalities on the day of transplant to 3 months post-transplant.

Preliminary data shows that the incidence of hypomagnesemia was significantly increased in the 3 month post-transplant period in all STx patients (p < 0.001). Incidence rates at 3 months were 68.6% of LTx patients, 50.9% KTx, and 41.7% of HTx. All STx patients received Tacrolimus3, magnesium supplementation, 58% received loop diuretics, and 71% received proton pump inhibitors (PPIs).

Hypomagnesemia has been reported to be more frequent in patients that were treated with Tacrolimus than Cyclosporine. There is a higher incidence of hypomagnesemia following kidney transplant as opposed to heart and liver transplants. There is also higher incidence of hypomagnesemia in the Double-organ transplants compared to the single-organ.

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SLE AFTER SARS-COV-2 INFECTION:

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SARS-COV-2 infection is often associated with exaggerated immune response, also referred to as a ‘cytokine storm’. There is growing concern that it may be linked to autoimmunity, with many cases of autoimmune diseases either triggered by or related to SARS-COV-2 having been reported, ranging from Guillain-Barre syndrome, Graves’ disease, multiple sclerosis, Kawasaki-like disease.

Our patient was a 20-year-old female with a history of hidradenitis who presented with malaise, feet and ankle swelling, asthma, anorexia, weight loss of 50 lbs of 4 months. She had COVID pneumonia 7 months prior and was also seen in the ER three afterwards for ankle pain and fatigue managed with antibiotics and analgesics. Exam findings included tender bilateral lower extremity edema, diffuse hyperkeratotic and hyperpigmented skin with hyperkeratosis of the soles of the feet. Serology, a CSF fluid analysis revealed total protein of 125mg/dl, elevated IgG 79.8, concerning for an underlying inflammatory meningitis. CT head was normal. Lumbar puncture was performed. IV vancomycin and piperacillin-tazobactam was started. CSF fluid analysis revealed total protein of 125mg/dl, elevated 1G 79.8, concerning for an underlying inflammatory pathology. EEG was unremarkable. She became oliguric with elevated creatinine, low Hb, and low Hct, and low platelet. Hypertension was negative. She responded well to dietary modifications with high potassium, low sodium diet and adding Triamterene to existing BP regimen. Meanwhile, renal venous sampling, which was done in view of possible juxtaglomerular cell tumor, is in process at this time. If unrevealing, she will need genetic testing to rule out tubulopathies.

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