

A Challenging Case of Secondary Hyperparathyroidism From Hypovitaminosis D in a Young Man with Hypertensive Crisis and Target Organ Damage

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1. Case Presentation

- 37-year-old male presented to the A&E Department with headache, visual disturbances, chest pain, and dizziness.
- Admission vital signs: HR 96 bpm, BP 250/170 mmHg on both arms, RR 16 breaths/min, temperature 37°C, SpO₂ 99% on air. Full alertness (GCS 15).
- Aching headache (6/10 severity) at the back of the head, and blurry vision without loss or eye pain, both starting on the same day.
- Episodes causing a feeling of passing out without loss of consciousness. Neurological examinations showed no abnormalities.
- Gradual-onset chest pain unrelated to breathing. Unremarkable cardiopulmonary examination.
- No abnormalities in the comprehensive systemic review. No hospitalizations, known medical conditions, medication use, allergies. Significant family history of brother's unexplained early death. Employed in a restaurant; no smoking, alcohol, or recreational drug use reported.

3. Diagnosis and Management

- Diagnosis of Malignant Hypertension: Established based on elevated blood pressure and HMOD involving the kidneys, eyes, and brain.
- Secondary Hypertension Considerations: Multiple characteristics, including age, hypertensive emergency, and HMOD, raised suspicion for secondary hypertension.
- Exclusion of Common Causes: Negative drug history; ruled out aortic coarctation, kidney disease, and obstructive sleep apnoea. Adrenal CT, aldosterone, and renin levels excluded Conn syndrome and rare monogenic causes.
- Identification of Secondary Hyperparathyroidism (SHPT): Elevated parathyroid hormone (PTH) at 192.5 pg/mL revealed reactive hyperparathyroidism due to low calcium (8 mg/dL) from vitamin D deficiency (8 ng/mL).
- Management and Treatment: Following ESC guidelines, malignant hypertension was managed with IV labetalol and nicardipine, targeting a 25% reduction in mean arterial pressure. Oral hydrochlorothiazide and amlodipine were later introduced, alongside vitamin D and calcium supplements.

5. Follow-up

- Careful control of blood pressure was undertaken to prevent complications and ensure optimal cerebral perfusion pressure. The choice of oral antihypertensives was tailored based on individual patient characteristics and response.
- Visual disturbances, dizziness, and renal function exhibited improvement with the normalization of blood pressure over several days.
- Potential causes of hypovitaminosis D were explored. Malabsorption syndrome was deemed unlikely; instead, inadequate sunlight exposure and dietary intake, were considered more probable factors.
- Despite low calcium, neuromuscular irritability symptoms were absent. The prolonged QTc interval, normalized with appropriate treatment.
- The patient's clinical outcome was satisfactory, marked by the absence of major complications. Ongoing regular outpatient follow-up is in place to monitor the patient.

2. Initial Workup

- Patient presented with a hypertensive crisis and features indicative of hypertension-mediated organ damage (HMOD), prompting adherence to ESC guidelines for hypertension diagnostic workup.
- ECG showed sinus rhythm with a heart rate of 93, without ST-segment or T-wave abnormalities. Signs of left ventricular hypertrophy (Sokolow-Lyon criteria) and P mitrale morphology were observed, along with a prolonged QTc interval of 476 ms.
- Chest X-ray displayed an increased cardiothoracic ratio.
- Transthoracic echocardiography revealed left atrial and left ventricular enlargement, preserved systolic function, and mitral regurgitation.
- Serial troponin measurements were negative. Renal function parameters indicated elevated urea (52 mg/dL) and creatinine (2.12 mg/dL). Other haematological and biochemical investigations were within normal ranges.
- Ophthalmic examination revealed hypertensive retinopathy. Brain CT and MRI disclosed multiple cerebral microhaemorrhages.

4. Figures

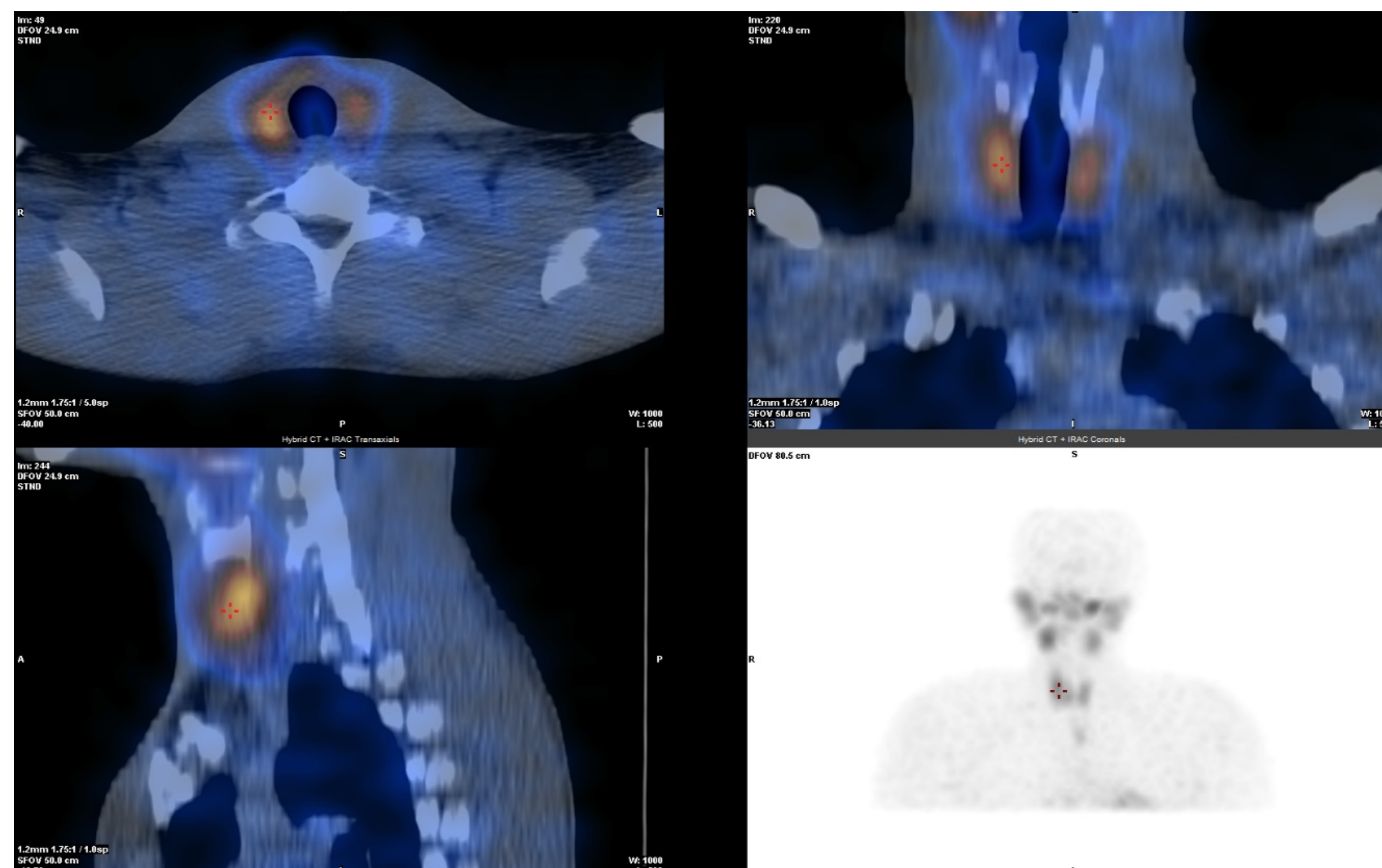


Figure 1: Parathyroid Scintigraphy with ^{99m}Tc-Sestamibi

6. Learning Points

- Recognize the rare link between elevated parathyroid hormone (PTH), low vitamin D, and hypertension.
- Emphasize the need for heightened suspicion of secondary hypertension in individuals under 40, when presenting with hypertensive crisis and HMOD.
- Stress the pivotal role of conducting a thorough initial workup following ESC guidelines to uncover essential information about HMOD. This emphasizes meticulous history-taking, comprehensive physical examination, and strategic diagnostic investigations.
- Highlight the importance of physicians exercising caution in the acute management of malignant hypertension, ensuring blood pressure is not excessively lowered unless specific indications are present.
- Emphasize the critical role of a multidisciplinary team. This underscores the effectiveness of a collaborative approach in delivering comprehensive care for complex cases.

7. References

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