20 years.

Patients who develop anti-GBM nephritis possess circulating anti-GBM antibodies [5,6,7.] The antigens recognized by the anti-GBM antibodies are not expressed in the native kidneys of patients with Alport syndrome but are present in the transplanted kidneys.

It has been observed that in patients with post transplantation anti-GBM nephritis, quaternary epitopes within alpha-345NC1 hexamers may initiate an alloimmune response after transplantation, triggering the formation of anti-GBM antibodies. Reliable detection of these alloantibodies by immunoassays using alpha-345NC1 hexamers may facilitate early and accurate diagnosis and improve outcomes.5

At present, the only way to determine whether a patient with Alport syndrome will develop post transplant anti-GBM nephritis is to perform the transplant. Certain patients, however, are at very low risk for developing post transplant anti-GBM nephritis, including those with normal hearing, patients with late progression to ESRD, and females with XLAS.

Post transplant anti-GBM nephritis usually develops within the first year of the transplant surgery. Because of excellent graft survival rates and a very low incidence of clinical anti-GBM disease, renal transplantation is not contraindicated in patients with Alport syndrome. However, in patients who have lost an allograft due to post transplant anti-GBM nephritis, the optimal management is uncertain because of the high likelihood of recurrence and subsequent allograft loss.

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CONNED BY CONN'S

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Abstract

Conn's syndrome or primary hyperaldosteronism is characterized by hypertension, hypokalemia and increased ratio of plasma aldosterone concentration to plasma renin activity. Primary aldosteronism occurs most commonly due to aldosterone producing adenoma (Conn's syndrome) or bilateral adrenal hyperplasia. The clinical manifestations may be varied. We report hereby a case with neurological manifestations of primary aldosteronism due to an aldosterone-producing adenoma. The patient was cured after performing adrenalectomy.

Keywords: Primary hyperaldosteronism, aldosterone producing adenoma, bilateral adrenal hyperplasia.

INTRODUCTION

Primary aldosteronism is characterized by hypertension, hypokalemia, suppressed renin activity and increased aldosterone excretion and was first described by J. W. Conn in 1955. Primary aldosteronism used to be considered as a rare form of hypertension but it is now recognized to be the most common form of secondary hypertension with prevalence estimates of 5-13% of all patients with hypertension. Primary aldosteronism occurs most commonly due to aldosterone-producing adenoma (Conn's syndrome) or idiopathic hyperplasia and less

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commonly due to primary (unilateral) adrenal hyperplasia, aldosterone-producing adrenocortical carcinoma or familial hyperaldosteronism[1].

Primary aldosteronism can sometimes pose a diagnostic dilemma as the presen tation may be very varied and misleading. We report a case with neurological presentation of primary aldosteronism due to an aldosterone-producing adenoma.

Case Report

30 years old male patient presented with weakness in all muscle groups in all four limbs without associated bowel, bladder, cranial nerve and speech involvement. Patient had 3 similar episodes in past 4 months for which he required hospitalisation and intravenous support. Patient a Central Reserve Police Force jawan had history of physical exertion prior to each of these episodes. There was no history of high carbohydrate diet, diuretics, herbal supplements, liquorice or any other medication before these episodes. There was no similar family history. On examination, his pulse was 76/min, Blood pressure was 140/100 mmHg and BMI was 22.65 kg/m^2.Patients higher functions and cranial nerve examination was within normal limits (WNL). He had hypotonia and power was grade II in all four limbs. Deep tendon reflexes in all four limbs were sluggish and bilateral plantars were flexors. Fundus examination was WNL in both eyes.

Patients investigations revealed serum potassium 2.7 mEq/l [normal range (NR):3.6-5.1 mEq/L], serum sodium 132 mEq/l, serum bicarbonate 28 mEq/l and 24 h urinary potassium excretion 58 mmol (NR-25-125mmol/day). The chest X-ray, ECG and the 2D-Doppler echocardiogram were normal.Fasting morning plasma aldosterone (FPA) in supine position was 24ng/dl (normally upto 19 ng/dl) , plasma renin activity (PRA) was 0.20 ng/ml hr (NR:0.29-3.7ng/ml hr), plasma aldosterone after suppression was 22 ng/dl and the plasma aldosterome/plasma renin activity ratio was 120 (normally upto 23.6). .pH =7.47, PaO2 10.4 kPa, PCO2 5.27 kPa. .The above results were considered diagnostic of primary aldosteronism.MRI abdomen revealed well defined round to oval T2W hyper intense lesion of size 1.2□2.2 cm showing significant contrast wash out s/o right adrenal adenoma . Left adrenal gland was normal.

The Primary aldosteronism (PA) was suspected because of persistent hypokalemia and recurrent quadriparesis in association with hypertension and metabolic alkalosis. Intravenous potassium supplementation began immediately, leading to a rapid improvement of clinical symptoms. Patient was given potassium supplements and spirinolactone 100mg/day. Patient underwent right adrenalectomy with uneventful perioperative period. Histopathological examination was consistent with adrenal adenoma. Spironolactone 100mg t.d.s. was administered and in the following day's normokalaemia was restored and blood pressure fell to normal levels. Potassium supplementation ceased and spironolactone was reduced gradually and was maintained at 25mg t.d.s. Following surgery, the patient was normotensive, and normokalemic without antihypertensive medications. He was discharged and follow up continued at the outpatient clinic. He remained normotensive and normokalemic after discharge without any drugs.

Discussion

The primary aldosteronism (PA) resulting from an adrenocortical adenoma (Conn's Syndrome) is a common and a curable cause of secondary hypertension[1]. The combination of hypertension, hypokalemia, and metabolic alkalosis is important for a diagnosis of PA. Primary aldosteronism with an adrenal tumor presents with muscular cramps, polyuria, headache and even paralysis. Paralytic myopathy in association with hypokalemia is a recognised feature of conns syndrome and is seen more commonly in oriental patients. Tumour is mostly benign adrenal adenoma. However there are reports of adrenal carcinoma also presenting with primary aldosteronism[2].

It is recommended to test for the PA in the following groups: patients with hypertension and hypokalemia, treatment-resistant hypertension (i.e. on 3 antihypertensive medications with poor control), severe hypertension (160mmHg systolic or 100 mmHg diastolic), hypertension with adrenal insidentaloma, and the onset of hypertension under the age of 20[1]. Screening is done by measuring the PAC(Plasma Aldosterone Concentration) level and PRC(Plasma Renin Concentration). When the PAC is greater than 15ng/mL, the PRC is less than 1ng/mL/h – as seen in this case and the ratio of (PAC/PRC) is greater than 20, with the sensitivity and specificity of approximately 75%. This test is valid as long as a patient is not taking aldosterone antagonists, such as

spironolactone, epleranone, or renin inhibitors[3] .

In patients with suspected primary aldosteronism, screening can be accomplished by measuring a morning (preferably between 0800 and 1000 h) ambulatory paired random Plasma Aldosterone Concentration (PAC) and plasma renin activity (PRA). An increased PAC: PRA ratio is not diagnostic by itself, and primary aldosteronism must be confirmed by demonstrating inappropriate aldosterone secretion. Aldosterone suppression testing can be performed with orally administered sodium chloride and measurement of urinary aldosterone or with intravenous sodium chloride loading and measurement of PAC[1].

In our case we used the oral sodium loading test which showed a non-suppressed urinary aldosterone excretion. Adrenal CT is not a correct choice in distinguishing between the Aldosterone Producing Adenoma and Idiopathic Hyperaldosteronism .It cannot reliably visualise microadenomas or distinguish incidentalomas from the Aldosteronis Producing Adenoma's,which makes Adrenal Venous Sampling to be the most accurate mean to differentiate between unilateral from bilateral forms of PA[4] .

The Adrenal Venous Sampling is essential for appropriate therapy in many patients with PA who have a high probability of having an aldosterone producing adenoma and want to pursue surgical management[3], but it is expensive and invasive. The procedure itself has low success rate because of the difficulty in cannulating the right adrenal vein (which is smaller than the left and empties directly into the IVC rather than the renal vein)[4]. A more practical approach is the selective use of adrenal venous sampling as recommended by Young which are based on patient preferences, age, and adrenal morphologic appearance on CT, clinical comorbid conditions, and clinical probability of finding an APA[1]. For patients younger than 40, in whom a solitary adenoma is >1cm with normal contralateral adrenal gland, a unilateral adrenalectomy may be done without venous sampling and in the absence of comorbid conditions[5]. Therefore, the AVS was bypassed in our case based on these criteria.

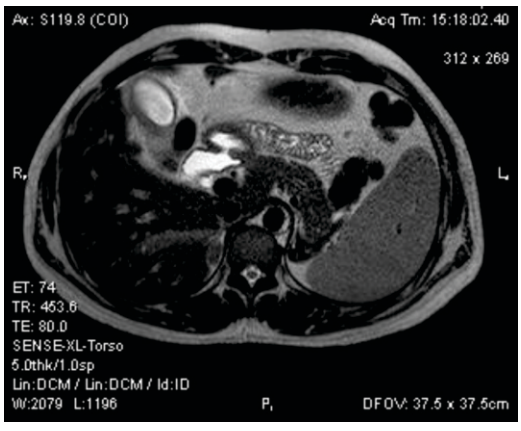

Fig.1. .MRI abdomen revealed well defined round to oval T2W hyper intense lesion of size 1.2□2.2 cm showing significant contrast wash out s/o right adrenal adenoma .
Left adrenal gland was WNL.(white arrow)

Unilateral adrenalectomy in patients with aldosterone producing adenoma or unilateral adrenal hyperplasia results in normalization of hypokalaemia in all these patients; hypertension is improved in all and is cured in approximately 30-60% of them. In bilateral adrenal forms of primary aldosteronism, unilateral or bilateral adrenalectomy seldom corrects the hypertension and they should be treated medically with a mineralocorticoid receptor antagonist[1].

In conclusion, primary hyper-aldosteronism can pose a diagnostic dilemma to the clinicians because of its varied presentations. Screening for hyper-aldosteronism should be undertaken more frequently in cases of resistant hypertension, hypertension with spontaneous or secondary hypokalemia and in patients with hypokalemic paralysis to treat them effectively.

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