TITLE: SYMPTOMATIC EARLY POST TRANSPLANT ERYTHROCYTOSIS: A CASE REPORT AND REVIEW OF LITRATURE

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ABSTRACT

Post-transplant erythrocytosis (PTE) has not received the much needed attention because it was thought to be a benign condition that is rarely characterized by thrombo-embolic complications. However, about 20% of renal transplant patients with PTE develop thrombo-embolic complications. We present a thirty year old male post-transplant patient who presented with a week history of blurring of vision, headache that was associated with dizziness. He had secondary failure of his arterio-venous fistula about 4 weeks prior to onset of his symptoms. He was successfully managed with sessions of phlebotomy and ramipril. This case highlights the risk factors and potential complication of PTE, a condition initially thought to be benign and the need for prompt intervention when indicated in order to prevent associated morbidity and mortality.

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INTRODUCTION

Post-transplant erythrocytosis (PTE) is defined as persistently elevated haematocrit greater than 51 % after renal transplantation. The prevalence of PTE varies from study to study and ranges between 7.5-37.3% .[1-5] This wide variation may be due to the different cut-off values used in the definition of PTE and diagnostic criteria. PTE has not received the much needed attention because it was thought to be a benign condition that is rarely characterized by thrombo-embolic complications.

We present a thirty year old male post-transplant patient who presented with a week history of blurring of vision, headache, dizziness and was successfully managed for PTE.

CASE SUMMARY

A 30 year old male who was 6 months post-transplant, presented with a week history of blurring of vision and headache. There was no associated redness of the eyes. Each episode lasted for a few minutes and was self limiting. There was no known aggravating or relieving factor. Headache was frontal in location, dull aching with no radiation to any other part of the head. There was no associated nausea, vomiting, photophobia or phonophobia, Severity of headache was not increased by straining or during any particular time of the day.

About 4 weeks prior to presentation, he noticed that there was loss of thrill over his left forearm fistula. There was no associated swelling, pain, discoloration or numbness on the digits. There was no preceding history of trauma to his upper limb. However, he was not bothered because he was no longer using the fistula. There was no history suggestive of transient ischaemic attack, chest pain, breathlessness, calf pain, cough or haemoptysis

He had been hypertensive for 6 years, but not diabetic. He was on maintenance hemodialysis for 7 months on account of end stage renal disease secondary to chronic glomerulonephritis prior to a living donor renal transplantation. He did not have nephrectomy of his native kidneys. His packed cell volume ranged between 20-24% prior to transplant. His post-transplant follow up had been uneventful prior to this event. He did not have any episode of transplant rejection and had good graft function. His serum creatinine value had been between 1.2-1.4 mg/dl post-transplant. His medications were tacrolimus, mycophenolate mofetil, prednisolone, metoprolol,

prazocin and amlodipine. His packed cell volume had been noticed to be on a steady rise in the previous clinic visit. He was not a smoker and neither does he take alcoholic beverages..

Examination showed an anxious young man who was not pale, anicteric, acyanosed, well hydrated, afebrile and there was no pedal oedema. His pulse rate was 75 per minute, regular with normal volume. There was absent thrill over the left forearm AV fistula. Blood pressure was 120/90 mmHg, jugular venous pressure was normal. Apex beat was displaced and heaving. First, second and fourth heart sounds were heard. The allograft was palpable in the right iliac fossa with absence of bruit. Other examination were essentially normal.

Urinalysis showed pale yellow urine with specific gravity of 1.020, p H of 6. Protein, glucose, ketones were all absent. Full blood count result showed a total white cell count of 8,000 cells/mm^3 with a normal differential count, packed cell volume of 58%, platelet count of 128,000 cells/mm^3. Erythrocyte sedimentation rate was 2mm/hr. Serum urea was 40mg/dl, creatinine was 1.28mg/dl and electrolytes were normal. Doppler flow of grafted kidney showed normal flow pattern in the renal artery with a restive index of 0.67-0.70.

An assessment of post-transplant erythrocytosis (PTE) possibly complicated by left AV graft thrombosis was made. He was placed on ramipril and had 3 sessions of phlebotomy. He had relief from all his symptoms following treatment.

DISCUSSION

The diagnosis of PTE in the index patient was based on a haematocrit value of 55% with symptoms attributable to erythrocytosis at the time of presentation. PTE as a form of erythrocytosis is differentiated from polycythemia rubra vera by the absence of splenomegaly, leukocytosis and thrombocytosis which were absent in this patient. Most cases of PTE occur between 8 months and 2 years after renal transplant, although it may occur earlier as reported in this patient who developed PTE 6 months post-transplant.

PTE has not received the much needed attention because it was thought to be a benign condition that is rarely characterized by thrombo-embolic complications. However, Wickre et al reported that about 20% of renal transplant patients with PTE developed thrombo-embolic complications on follow-up.[6] This finding was also supported by Hestin et al [7] The sudden loss of function of the patient's AV fistula around the time of presentation may have been due to thrombosis of the fistula. However, a confirmatory doppler scan was not done due to financial constraints

The features of PTE like headache, dizziness, malaise, lethargy, plethora are only seen in 60% of affected patients, hence a high index of suspicion is needed in other not to miss the diagnosis.[8] This patient had headache, malaise and blurring of vision which could be attributed to erythrocytosis. PTE could be transient or persist for several years if treatment is not instituted, but spontaneous remission can occur in up to 25% of affected patients.[8]

The pathogenesis of PTE is not well understood, but suggested pathogenic mechanisms include defective feedback regulation of erythropoietin (EPO) metabolism, increased production of EPO, increased sensitivity of the erythroid stem cells to EPO, direct stimulation of erythroid precursors by angiotensin II, and abnormalities in circulating insulin-like growth factor 1 levels.

Risk factors for PTE include male gender, smoking, hypertension, diabetes mellitus, short duration on dialysis before transplant, high pre-transplant hematocrit value, use of cyclosporine and diuretics, reduced frequency of episodes of acute rejection, excellent graft function, retention of native kidneys, ADPKD as aetiology of CKD.[5,9,10] The possible risk factors in this patient were presence of hypertension, retention of native kidneys, good graft function, absence of episodes of acute rejection and short duration on dialysis before renal transplantation.

PTE may be a manifestation of transplant renal artery stenosis which may have other clinical features like hypertension, allograft bruit, oedema and acute decline in renal function. Hence, patients with PTE should be evaluated for transplant renal artery stenosis through doppler ultrasound scanning of the allograft as was done in this patient.

Treatment should be instituted when the PCV is greater than 55% because of increased risk of developing complications or in the presence of symptoms even when the PCV is not greater that 55%. Renin-angiotensin system inhibitors such as ACEIs or ARBs and theophylline are effective treatment.[4,11] Phlebotomy is the treatment modality of choice in symptomatic patients or females who are willing to get pregnant because of the teratogenic effects of ACEIs. [12] The patient had serial phlebotomies because he was symptomatic with a hematocrit greater than 55%. Native nephrectomy could be performed if these treatment modalities are ineffective in the presence of suspected renal lesion like acquired or hereditary cystic kidney disease.[13] Phlebotomy should be done cautiously and slowly to avoid complications like acute myocardial infarction, hypotension, cardiovascular collapse and death in those with pre-existing cardiovascular disease which is common in renal disease patients.[14]

Conclusion: This case highlights the risk factors and potential complication of PTE, a condition initially thought to be benign and the need for prompt intervention when indicated in order to prevent associated morbidity and mortality.

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