



INDUCTION CHEMOTHERAPY CAUSING PSEUDOLESION IN THE KIDNEY - ANTOPOL-GOLDMAN LESION: A RADIOLOGICAL DIAGNOSIS AND FOLLOW UP WITH REVIEW OF LITERATURE

Radiodiagnosis

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ABSTRACT

Antopol - Goldman lesion of the kidney also termed as suburothelial pelvic hematoma is a rare entity that is associated with macroscopic hematuria. In this article, we report a patient who is known case of acute myeloid leukemia presenting with hematuria in which induction chemotherapy is the probable hypothesis. The chemotherapy has led to suburothelial pelvic hematoma and in which the radiological diagnosis was possible with follow up observation. The diagnosis of this should be kept in mind in cases of hematuria as it might mimic renal neoplasms and thus renal biopsy or nephrectomy can be avoided.

KEYWORDS

Suburothelial pelvic hematoma; Hematuria; Induction chemotherapy; Acute myeloid leukemia.

INTRODUCTION

Antopol - Goldman lesion of the kidney is a rare entity with only few cases reported in literature as primarily a radiological diagnosis. Most of the cases being diagnosed after nephrectomy as it mimics renal neoplasm. This entity was first described by Antopol and Goldman in 1948 [1] in which seven patients who presented with hematuria had undergone nephrectomy with the initial diagnosis of renal neoplasms due to the presence of filling defects in the renal collecting system. The term 'Antopol - Goldman lesion' has been used to denote suburothelial pelvic hematoma in the renal pelvis since then. Clinically the patients may present with painful or painless macroscopic hematuria and may have flank pain. Here we describe a 7 yr old child presenting with hematuria undergoing induction chemotherapy for acute myeloid leukemia in which the radiological diagnosis of suburothelial pelvic hematoma was possible with follow up observation.

CASE PRESENTATION

A 7 year old child came to paediatrics department with complaints of painless hematuria for 2 days and decreased urine output for 1 day. The patient also had complaints of abdomen distension and facial puffiness for 1 day. The patient was known case of acute myeloid leukemia - M2 undergoing induction chemotherapy of which 2 cycles had been completed. On physical examination pallor, bilateral pitting pedal edema and facial puffiness was present with elevated blood pressure of 130/80 mm Hg. On biochemical evaluation the patient was found to have elevated renal parameters [creatinine-2.4 & urea-55]. Ultrasonogram of the abdomen revealed a well-defined heterogeneous predominantly hyper echogenic focus with no Doppler signal within it seen in the right renal pelvis. The echogenic lesion causes moderate right hydronephrosis with diffuse urothelial thickening of the right renal pelvis was seen. The left kidney and pelvi-calyceal system were unremarkable.

On further biochemical valuation, the prothrombin time [PT-16] and partial thromboplastin time, Activated [aPTT - 28] are mildly prolonged with mildly elevated INR of 1.36. The patient was admitted in paediatric intensive care unit and a hemodialysis was immediately done in view of elevated renal parameters.

On unenhanced computed tomography, curvilinear hyperdensity seen in suburothelial region of the right renal pelvis causing moderate right hydronephrosis. On further administration of iodinated contrast media, no abnormal enhancing lesion or other focal lesion were seen. With all these intricate findings a diagnosis suburothelial pelvic

hematoma - Antopol-Goldman lesion was made and follow up was suggested.

The patient's haemoglobin was 8.4 with a total count of 3500 on third day of the hospital visit and follow up

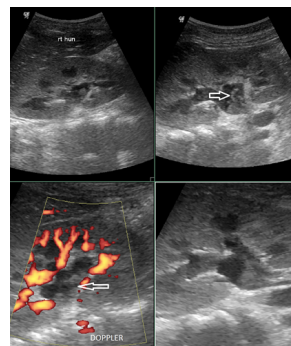


FIGURE 1: Ultrasonogram image showing right proximal hydronephrosis and an heteroechoic avascular focus in the renal pelvis (Arrows).

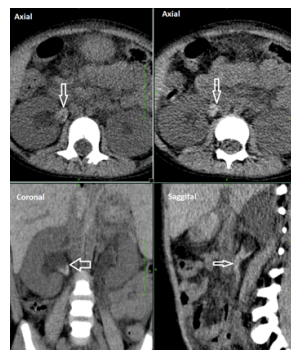


FIGURE 2: CT images showing suburothelial curvilinear hyperdensity in right renal pelvis causing right proximal hydronephrosis (Arrows).

The patient was treated continuously for elevated blood pressure and also received 2 doses of granulocyte colony stimulating factor (G-

CSF) to boost the white blood cells.

A renal arterial Doppler of the right kidney done 3 days later showed no significant arterial stenosis or occlusion or thrombosis with no significant internal change in the other ultrasonogram findings.

4 more cycles of hemodialysis was done and the child finally passed urine after 6 days of hospital stay with blood clots. The child then got symptomatically better, passed urine normally with improved renal parameters and hence was discharged.

A follow up ultrasonogram one month later showed normal right renal pelvis with no evidence of echogenic foci within and no evidence of bilateral hydronephrosis.



FIGURE 3: Follow up ultrasonogram after 1 month and 6 months shows complete resolution of the lesion.

DISCUSSION

Antopol – Goldman lesion is a rare benign disease process that can mimic a renal, pelvic or ureteral neoplasm and for that reason in the past it was diagnosed after nephrectomy. The pathology is not exclusive of the renal pelvis, as the hematoma could spread all over the calyces and extend into the proximal ureter. But still most of the cases in the literature affect the renal pelvis [1-8]. Suburothelial pelvic hemorrhage appears to affect both the kidneys equally without sex predilection [2]. The etiopathogenesis of this entity is associated with trauma, congenital malformations like bifid pelvis, fetal lobulation, aberrant vessels and ureteral insertion abnormalities, diabetes, hypertension, and anticoagulant therapy especially warfarin [3-6]. Most recent studies have established associations with amyloidosis [2] and bleeding diatheses like factor V deficiency and haemophilia [7,8]. Ultrasonogram features of suburothelial pelvic hematoma have rarely been reported in literature. In our case, an echogenic focus with no internal vascularity was seen in the right renal pelvis. Hydronephrosis which is an uncommon finding was seen in our case bilaterally, which propels the possibility of a systemic cause for the suburothelial hemorrhage. Historically if present the hydronephrosis was very mild [7]. Diffuse urothelial thickening was also seen bilaterally which further vindicates the systemic cause. On CT suburothelial hemorrhage appears as a high density lesion in the renal pelvis or ureter on unenhanced scans. No enhancement is seen on contrast administration. Hydronephrosis may occur as a result of diffuse mural thickening of the renal pelvis and upper ureter that compromises the lumen [11,12]. Thus unenhanced phase is the best phase to establish the diagnosis of suburothelial hemorrhage [10,11,12] since the hyperdensity is the most conspicuous in this phase which is concurrent with our case.

This child came after 2 cycles of induction chemotherapy for acute myeloid leukemia. Induction is the first phase of treatment with the primary goal of clearing the blood of leukemic cells (blasts) and to reduce the number of blasts in the bone marrow to normal. But the chemotherapeutic drugs also affect the normal cells in bone marrow, which can cause lowering of blood cell counts in AML patients. This can lead to easy bruising or bleeding (low blood platelets) and fatigue (low red blood cells). Chemotherapeutic drugs increase the risk of thromboembolic complications such as hemorrhage and thrombosis [13]. They affect the liver functions and decrease the synthesis of both procoagulation and anticoagulation factors. This affects platelet synthesis and hence complications results [14]. Thus, this disharmony can be elicited as the probable hypothesis that has led to bleeding, suburothelial hemorrhage in the right kidney, in our case. After 2 doses of granulocyte colony stimulating factor (G-CSF) to boost the white blood cells and 4 more cycles of hemodialysis the child passed urine

with blood clots.

A follow up ultrasonogram done one month and six months later showed normal right renal pelvis with no evidence of echogenic foci which confirmed the radiological diagnosis of Antopol – Goldman lesion.

CONCLUSION

In conclusion, Antopol – Goldman lesion was radiologically diagnosed in our case as a consequence of induction chemotherapy for acute myeloid leukemia with follow up and thus establishes chemotherapeutic drugs as a possible etiopathogenesis to this entity. Also knowledge about this rare entity is imperative for definite and accurate diagnosis in cases of hematuria as it's a benign condition which can be resolved on treating the primarily associated etiologies and to differentiate it from malignancy.

CONFLICT OF INTEREST: Nil

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