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## CASE REPORT

# RENAL VEIN THROMBOSIS IN A CHILD, A RARE CASE WITH AN UNUSUAL FINDING ON NUCLEAR RENAL SCAN

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### ABSTRACT

We present a case of unusual finding on nuclear renal scan in a child of 9 years. Latter on that was diagnosed as a case of renal vein thrombosis. The child presented in pediatric outpatient department (OPD) with complaint of intermittent abdominal pain. On abdominal ultrasound there were asymmetrical kidneys in size. On nuclear scan there was peripheral rim sign/doughnut sign not mentioned or explained in literature previously that was reported as suspicious for renal vascular insult. Renal vein thrombosis was confirmed on renal Doppler ultrasound. Patient recovered completely with medical treatment in pediatric nephrology department without surgical intervention.

## INTRODUCTION

Renal vein thrombosis is very rare in pediatric age group with nonspecific clinical presentation. It may cause diagnostic challenges. Nuclear renal scan is not done in routine for renal evaluation but it may help to establish the diagnosis of underlying cause for impaired renal function as is in our case presented here.

## CASE REPORT

A child 10 years old presented in pediatric outpatient department with complaints of abdominal pain. There was previous history of fever, vomiting and diarrhea few days back that was settled after treatment from local general practitioner. Patient was admitted in ward for evaluation. There was no previous history of any renal problem. Routine investigations were done. X-ray chest was normal. CBC (complete blood examination) revealed Leukocyte count and platelet counts within normal limits but Hemoglobin was low =6.5 grams (normal value is 14 – 16 grams) and ESR (Erythrocyte sedimentation rate) was high = 150 (normal value is <15). On CUE (complete urine examination) albuminuria was positive. RPMs (Renal Parameters) were impaired with urea = 50 mg/dl and creatinine = 1.3 mg/dl. On abdominal USG (ultrasonography) right kidney was normal in size and shape

measuring 9x 4.2 cm while Left kidney was comparatively enlarged and hypo echoic measuring 11 x 5 cm (Fig 1). On DMSA nuclear scan left kidney showed a subtle rim of peripheral radiotracer uptake more clear in upper pole with large central photon deficient area (Fig 2) however on USG there was no SOL (space occupying lesion) in left kidney mid pole. Radiotracer uptake was smooth and homogeneous by Right kidney. DTPA scan was done on second day for evaluation of differential renal function assessed by estimation of GFR (glomerular Filtration Rate) of individual kidneys. DTPA scan also showed large central photon deficient area with tracer uptake on peripheral margins in left kidney while tracer uptake was homogeneous in right kidney. The GFR of Left kidney was approx. 6 ml/min indicative of poor functioning left kidney while right kidney was adequately functioning with GFR 39.8 ml/min (Fig 3). On nuclear renal scan renal vascular insult was suspected so patient was suggested for RENAL vascular Doppler study that revealed left renal vein thrombosis on gray scale and almost absent flow in lower and mid poles with preserved vascularity in upper pole on Doppler flow study.

## DISCUSSION

Renal vein thrombosis is occlusion of renal veins by thrombus that ultimately leads to reduced drainage of affected kidney; Occlusion can be unilateral or bilateral. Literature shows that Deep vein Thrombosis (DVT) is extremely rare in pediatric age group (Aabideen et al., 2012). According to one study the incidence of DVT in 1 moth to 18 years old children is 0.05%.

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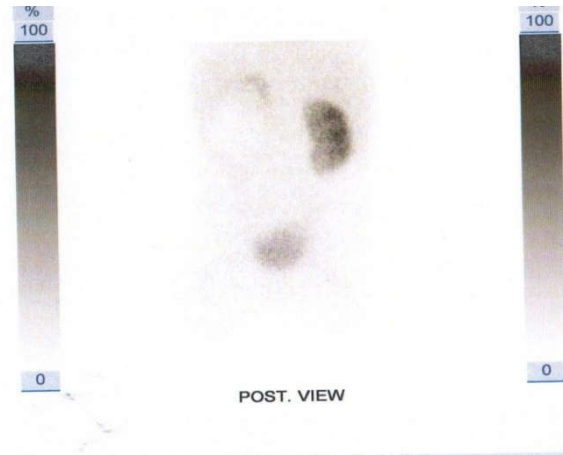
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96.4% of these cases were having one or more underlying predisposing factors (Andrew *et al.*, 1994). Most common causes or predisposing factors include blood clotting abnormalities, dehydration and hypercoagulable states or blunt trauma (Dutta and Venugopal, 2009; Wessels and McAninch, 2005). RVT presents with few symptoms. Clinical presentation is variable. According to one study 35 % of patients are symptom free (van Ommen *et al.*, 2001). Symptoms may include decrease in urine output, hematuria, edema and worsening proteinuria.

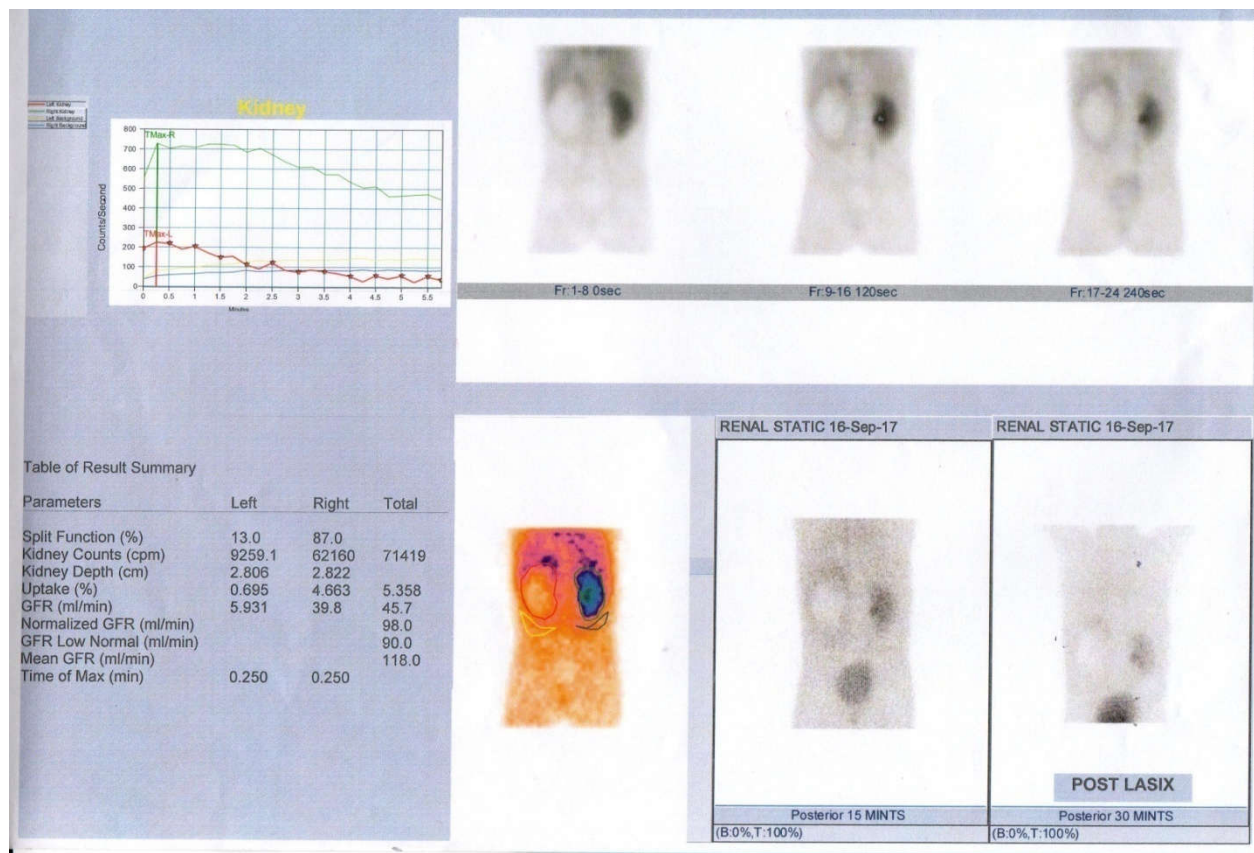


**Fig. 1.** USG image showing left kidney larger and comparatively hypoechoic

2005). In our case 9 years old child presented with nonspecific abdominal pain with history of vomiting and diarrhea. So the most likely underlying predisposing factor was dehydration. Unfortunately there are no specific laboratory tests for its diagnosis. Diagnosis is only based on correlation of patient's symptoms, history and Radiological imaging. If vein is completely blocked the kidney size will increase to its maximum within few days. Ultrasound imaging helps to find its size and echogenicity (Ricci and Lloyd, 1990). Renal blood flow can be detected on color Doppler USG (Radermacher, 2005).



**Fig. 2.** DMSA scan showing large central photon deficient area with subtle marginal rim uptake



**Fig. 3** DTPA renal scan showing poor functioning left kidney with peripheral rim uptake with large photon deficient area in centre

If not diagnosed or treated in time may result in acute or chronic kidney disease. Other complication of renal vein thrombosis includes migration of clot to other parts of body and pulmonary embolism, a severe complication is one of these outcomes that may prove fatal and may cause death if not treated in time (Harrington and Kassirer, 1982; Sridhar *et al.*,

The CT angiography (CTA) is increasingly used for diagnosis of RVT because of being fast and noninvasive (Asghar *et al.*, 2007). An alternative is MRA (Magnetic resonance angiography). It has got advantage on CTA for avoiding radiation but is expensive. An inferior Venography can localize the thrombus (Asghar *et al.*, 2007). But it is no more

recommended because of better option for CTA. Nuclear Renal scan is done by special camera after giving small amount of radioactive material. It shows not only anatomical features of kidney including size, shape but also its functions. It can find the underlying cause of reduced kidney function, obstruction, or injury. It can provide unique information that is often unattainable using other imaging procedures. Renal Nuclear scan is routinely not suggested for diagnosis of RVT. In our case it was done to find out any underlying cause for proteinuria, impaired renal parameters and asymmetrical kidney sizes observed on abdominal USG and unusual finding raised suspicion for vascular insult that was confirmed on renal Doppler USG. Main Treatment of RVT is based on prevention of clot progression in kidney and to maintain normal renal function. Heparin is first line of treatment to prevent extension with low risk of complications. Use of oral anticoagulants is standard therapy to prevent recurrence. Its administration needs careful monitoring as it may interact with other drugs(1, 10). Same treatment was given successfully in our patient.

### Conclusion

Renal vein thrombosis might be a cause for deranged renal function test in children and must be included in differential diagnosis when children present with short history of vomiting and diarrhea. RVT is not common but may result in complications leading to serious outcomes if missed to diagnose. Nuclear scan, if facility available, can help to establish the differential diagnosis for cause of deranged renal function. As per literature review, No such unusual finding of RVT on nuclear scan has been reported before.

### REFERENCES

- Aabideen K, Ogendele M, Ahmad I, Amegavie L. 2013. Deep vein thrombosis in children. *Pediatric reports*, 5(2):48.
- Andrew M, David M, Adams M, Ali K, Anderson R, Barnard D, et al. 1994. Venous thromboembolic complications (VTE) in children: first analyses of the Canadian Registry of VTE. *Blood*, 83(5):1251-7.
- Dutta T, Venugopal V. 2009. Venous thromboembolism: the intricacies. *Journal of postgraduate medicine*, 55(1):55.
- Wessels H, McAninch JW. 2005. *Urological Emergencies: A Practical Guide: Humana*.
- Van Ommen CH, Heijboer H, Büller HR, Hirasing RA, Heijmans HS, Peters M. 2001. Venous thromboembolism in childhood: a prospective two-year registry in The Netherlands. *The Journal of pediatrics*, 139(5):676-81.
- Harrington JT, Kassirer JP. 1982. Renal vein thrombosis. *Annual review of medicine*, 33(1):255-62.
- Sridhar AV, Naveen Rao K, Chakraborty S. 2005. A six-year old with fatal pulmonary embolism. *Acta Paediatrica*, 94(7): 977-9.
- Ricci MA, Lloyd DA. 1990. Renal venous thrombosis in infants and children. *Archives of Surgery*, 125(9):1195-9.
- Radermacher J. 2005. Ultrasonography of the kidney and renal vessels. I. Normal findings, inherited and parenchymal diseases. *Der Urologe Ausg A.*, 44(11):1351-63; quiz 64.
- Asghar M, Ahmed K, Shah S, Siddique M, Dasgupta P, Khan M. 2007. Renal vein thrombosis. *European journal of vascular and endovascular surgery*, 34(2):217-23.

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