

# Unique Features Of Polycythemia Observed On Plain Non Contrast Ct Head

S Gayathri, A Prasad, S Aggarwal, B Baruah

## Citation

S Gayathri, A Prasad, S Aggarwal, B Baruah. *Unique Features Of Polycythemia Observed On Plain Non Contrast Ct Head.* The Internet Journal of Radiology. 2009 Volume 11 Number 1.

## Abstract

We present a case of Polycythemia secondary to a congenital cardiac anomaly presenting with acute neurological complications showing hyperdense venous sinuses and cerebral vasculature in association with a cerebral abscess.

## INTRODUCTION

Neurological conditions associated with Polycythemia may warrant an emergency non contrast CT scan of the head. The unique findings associated with Polycythemia have not been well characterized in literature. We present a case of Polycythemia associated with hyperdense dural venous sinuses and cerebral vasculature hence simulating the appearance of a contrast enhanced CT on Plain CT films.

## CASE REPORT

A 27 year old male patient presented to our emergency with history of fever and headache for the past 4 days with altered sensorium for 2 days and a brief episode of loss of consciousness two days back. Patient had a history of breathlessness on and off since three years of age. He was diagnosed as a case of heart disease but financial constraints prevented timely treatment. Examination revealed central cyanosis, rt hemiparesis and a pansystolic murmur over the epicardium.

NCCT findings were suggestive of a left temporoparietal cerebral abscess associated with hyperdensity of all cerebral venous sinuses and cerebral vasculature. (patient had not been given any intravenous contrast agents).

Figure 1



- Evidence of a well defined Oval Hypodense lesion in Lt temporo parietal lobe with thin regular wall with significant perilesional edema in Lt frontal temporal and parietal lobes
- With mass effect seen with sulcal effacement, compression of ipsilateral Lat Ventricle

Figure 2



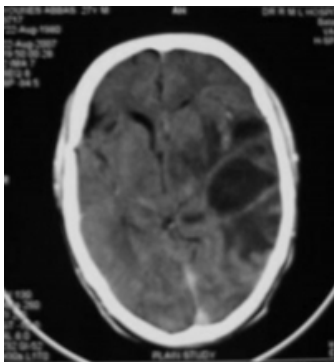
- Hyperdensity in Cerebral Vasculature on Non Contrast CT Head simulating a CECT

Figure 3



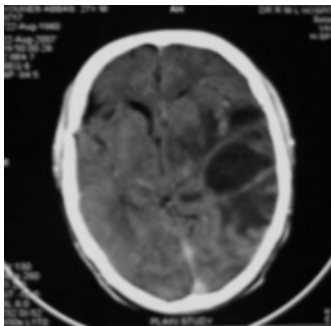
● Hyperdensity in Lt Transverse sinus

Figure 4



● Hyperdensity of straight sinus and Sagittal sinus

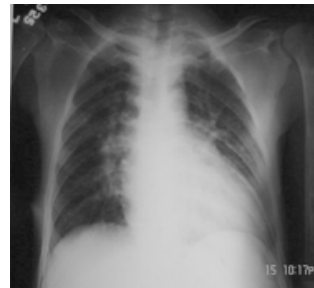
Figure 5



Hyperdensity in straight sinus And sagittal sinus

Findings suggestive of Lt temporoparietal Cerebral abscess with Hyper-attenuating Cerebral Vasculature, Lt Transverse sinus, Straight sinus and parts of Superior sagittal and Sigmoid sinus (appearance simulating CECT on an NCCT Head)

Figure 6



Chest x ray  
Cardiomegaly with pulmonary plethora with a narrow pedicle

Echocardiography suggestive of Complex cyanotic heart disease with transposition of great arteries with a pulmonary stenosis and bidirectional shunt associated with a large VSD and ASD .

### DISCUSSION

Features of polycythemia on NCCT head are not well characterised in literature however it includes Increased attenuation of cerebral vessels and subtle increase in radiographic attenuation of venous sinuses. Increased radiographic attenuation is primarily a reflection of haemoconcentration and attenuation of the haemoglobin protein (with minimal contribution from increased iron content<sup>1</sup>).

However increases attenuation of venous sinuses is typically seen in cerebral venous sinus thrombosis. Cerebral venous thrombosis is a known complication of polycythemia and hypercoagulable states and hence may coexist. MR Venography , CT venography<sup>2</sup> or Catheter venography may be required to differentiate between cerebral venous thrombosis in a patient of polycythemia with hyper dense venous sinuses.

Haematocrit levels help in the diagnosis of a patient with hyperdense venous sinuses on a non contrast ct scan. Haematocrit in this case – 76.3% and Hb level – 25.8 gm%.

Polycythemia may mimic cerebral venous thrombosis AND polycythemia may cause cerebral venous thrombosis.

### CONCLUSION

We hence conclude that hyperdensity of cerebral vessels and venous sinuses may be associated with Polycythemia and cerebral venous thrombosis must be meticulously ruled out in such cases as the two may coexist.

### References

1. John F. Healy and Clint Nichols. Polycythemia Mimicking Venous Sinus Thrombosis. AJNR Am J Neuroradiol 23:1402–1403, September 2002

2. Mathieu H. Rodallec, MD, Alexandre Krainik, MD, PhD,  
Antoine Feydy, MD, PhD Cerebral Venous Thrombosis and

Multidetector CT Angiography: Tips and Tricks.  
RadioGraphics 2006;26:S5-S18

**Author Information**

**S. Gayathri, PGY 2**

Department of Radiodiagnosis, Dr.Ram Manohar Lohia Hospital

**Akhila Prasad, MD, DNB**

Specialist, Department of Radiodiagnosis, Dr.Ram Manohar Lohia Hospital

**Shailendra Aggarwal, MD**

Sr Resident, Department of Radiodiagnosis, Dr.Ram Manohar Lohia Hospital

**B P Baruah, MD**

Consultant & Head of the Department, Department of Radiodiagnosis, Dr.Ram Manohar Lohia Hospital