ORIGINAL RESEARCH PAPER

Radio-Diagnosis

A VERY RARE CASE OF FISTULOUS COMMUNICATION BETWEEN ANOMALOUS CELIAC ARTERY BRANCH, RIGHT INFERIOR PULMONARY VEIN AND RIGHT ANOMALOUS SUPERIOR PULMONARY VEIN

KEY WORDS: Partial anomalous pulmonary venous return, anomalous celiac artery branch, palpitations, fistulous communication

PVS Abhishek — Assistant professor in Radiology department , Chalmeda Anand Rao Institute of Medical Sciences , Karimnagar , Telangana , India

Dandamudi Sravya* — Junior residents in the Department of Radiodiagnosis , Chalmeda Anand Rao Institute of Medical Sciences , Karimnagar, Telangana , India*Corresponding Author

Pingali Yashwanth Kumar — Junior residents in the Department of Radiodiagnosis , Chalmeda Anand Rao Institute of Medical Sciences , Karimnagar, Telangana , India

ABSTRACT

Anomalous pulmonary venous return (PAPVR) is a rare condition with a reported incidence of 0.4-0.7%and there is a fistulous communication between anomalous celiac artery branch and anomaloussuperior pulmonary vein and inferior pulmonary vein which is very rare. We are reporting a case of a 48 years old female patient, who presented with complaints of shortness of breath, palpitations and chest pain since 1month. CT Pulmonary angiography showed partial anomalous pulmonary venous return, anomalous celiac artery branch communicating with anomalous right superior pulmonary vein and right inferior pulmonary vein.

CASE SUMMARY:

A 48 year old female patient presented to us with complaints of shortness of breath, palpitations and chest pain since 1month. On clinical examination no significant findings were noted. Patient had no known Co-morbidities. There is a history of similar complaints 5yrs ago .Family history was not significant. Patient was advised to get a CT Chest done. In CT Chest we found dilated tubular structure seen in right lower lobe , which was suspected to be anomalous pulmonary vessel noted in right lung and was advised pulmonary angiogram.

IMAGING FINDINGS:

Plain chest CT revealed a tubular anomalous structure draining into mediastinum.

CT Pulmonary angiogram has revealed dilated anomalous right superior pulmonary vein draining into right superior vena cava instead of left atrium (Figure 1), however right inferior pulmonary vein is draining into left atrium(Figure 3 and 4).

An anomalous systemic arterial branch (Figure 2) is seen arising from celiac artery seen ascending into lower lobe of right lung and connecting to anomalous superior pulmonary and inferior pulmonary veins.

Both the left superior and inferior pulmonary veins were draining into left atrium with no variant anatomical drainage (Figures 5 and 6).

No obvious parenchymal changes are noted in both the lungs. No increase in cardiothoracic ratio noted.

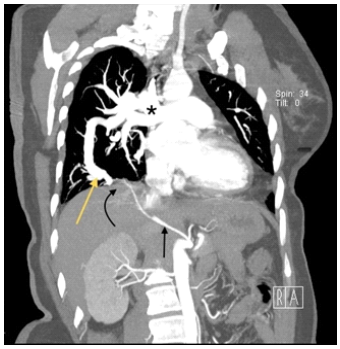


Figure 1 showing Anomalous right superior pulmonary vein (yellow arrow), draining into superior vena cava(*). Anomalous systemic coeliac artery branch (curved black arrow) arising from celiac artery (straight black arrow)

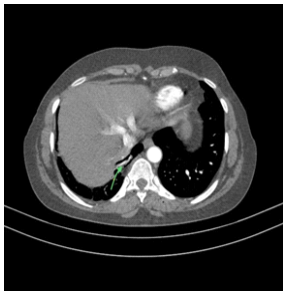
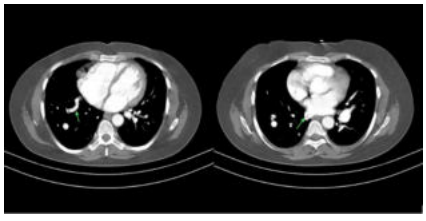
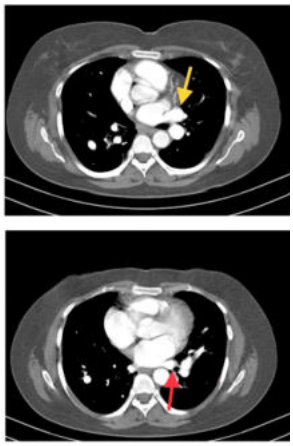


Figure 2 showing Anomalous systemic coeliac artery branch (green arrow)



Figures 3 and 4 showing right inferior pulmonary artery (green arrows)



Figures 5 and 6 showing normal anatomical drainage of left superior (yellow), inferior pulmonary veins (red arrow) and Anomalous systemic celiac artery branch (green arrow)

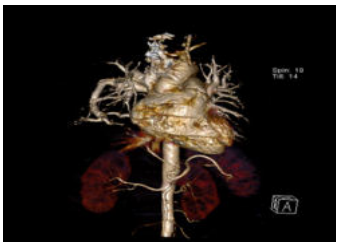


Figure 7 showing VRT reconstructed image showing right superior ,inferior pulmonary veins and their communication with anomalous celiac artery branch.

DISCUSSION:

The Partial anomalous pulmonary venous return (PAPVR) is a rare entity with reported incidence of 0.4-0.7%. It is usually noted as an incidental finding. In PAPVR any one of the pulmonary vein is seen draining into other than left atrium. Drainage of all pulmonary veins outside the left atrium is termed total anomalous pulmonary venous drainage (TAPVD).

Usually patients with PAPVR are asymptomatic or mildly symptomatic and this condition more frequently affects the right lung but left lung may be more often detected. Most common form is right superior pulmonary vein draining into superior venal cava. This results in left to right shunt. Anomalous pulmonary venous return is commonly associated with atrial septal defect.

The magnitude of the left-to-right shunt is dependent of the number PAPVD. PAPVD is one of the treatable causes of pulmonary hypertension in adults.

Our case shows dilated right superior pulmonary vein draining into superior vena cava and an aberrant branch of celiac artery noted. This aberrant arterial branch is seen communicating with anomalous rightsuperior pulmonary vein and right inferior pulmonary vein.

Systemic arterial branch to pulmonary vein fistula is a very rare, undetected anomaly. To the best of our knowledge this is a very very rare case report of aberrant celiac arterial branch communicating with both right inferior and right superior pulmonary veins.

In arterial branch to pulmonary vein fistula, CT Angiography or MRI can also diagnose presence of lung sequestration.

Depending upon the patient symptoms and severity of the disease, treatment should be planned and early surgical interventions need to be considered if required to prevent the adverse outcomes.

Computed Tomography pulmonary angiography is considered as superior modality for its diagnosis.

CONCLUSION:

CT angiogram not only can demonstrate parenchymal lung changes but also can delineate its systemic arterial supply and venous drainage.

Our case shows anomalous systemic arterial supply in communication with Right superior pulmonary vein and Right inferior pulmonary vein. This case highlights the key role of multimodality imaging in the diagnosis and management of a very rare anomaly.

The most likely presentation in symptomatic adults is haemoptysis, which is believed to be due to the higher systemic arterial pressure compared with the normal lower pulmonary arterial pressures.

Treatment, requires careful discussion between the clinical team and the patient, particularly in symptomatic individuals.

DECLARATION OF PATIENT CONSENT:

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the article. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

CONFLICT OF INTEREST:

There are no conflicts of interest.

AUTHOR'S CONTRIBUTIONS:

PVS ABHISHEK case identification, supervised, critically reviewed and critically revised the paper; DANDAMUDI SRAVYA and PINGALI YASHWANTH KUMAR reviewed literature, compiled, interpretation of the data, and prepared the manuscript.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil

REFERENCES:

1. Partial Anomalous Pulmonary Venous Return Chao-Chun Chang, Chia-Ying Lin Radiology 2022 302:3, 513-513.
2. D. Pisola, V. Bifulco,Left partial anomalous pulmonary venous connection (PAPVC), a rare pulmonary venous variant,Radiology Case Reports,Volume 15,Issue 12,2020,Pages 2515-2518,ISSN1930-0433,
3. Lyen, S., Wijesuriya, S., Ngan-Soo, E. et al. Anomalous pulmonary venous drainage: a pictorial essay with a CT focus. J Congenit Heart Dis 1, 7 (2017). https://doi.org/10.1186/s40949-017-0008-4
4. Aorta–to–Pulmonary Vein Fistula in an Asymptomatic 25-Year-Old Man Arun Dahiya, MD, PatrickCollier, MB,PhD, RichardKrasuski, MD, Vidyasagar Kalahasti, MD, Pedro del Nido, MD, and William J. Stewart, MD_x000B_American journal of Roentgenology.2004;182: 1139-1150. 10.2214.
5. Arenas J, Alonso S, Latorre FF. Spiral CT diagnosis of isolated systemic supply to normal lung merging from the coeliac trunk. Clin Radiol 2001; 56: 163–5. doi: 10.1053/crad.1999.0169
6. Luke K, Thomas R, Tudor G. An easily overlooked cause of haemoptysis and heart failure; anomalous systemic arterial supply to normal lung. BJR Case Rep 2019; 5: 20190089.