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Research Article

UNRUPTURED SINUS OF VALSALVA ANEURYSM FROM LEFT CORONARY SINUS SECONDARY TO BRUCELLA ENDOCARDITIS

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ABSTRACT

Unruptured sinus of valsalva aneurysm (SVA) is a rare cardiac condition occurring in the general population, with potential for grave complications. Unruptured sinus of valsalva aneurysms because of Brucella endocarditis is rare , it arising from left coronary sinus is very rare. Most of the cases earlier were diagnosed by echocardiography and also by conventional angiography. But with the availability of advanced imaging mo1dalities like 128 slice cardiac CT and MR modalities, this condition can be accurately assessed noninvasively. We report a case of 40 year old male patient presenting with pyrexia of unknown origin .clinical examination revealed early diastolic murmur and ejection systolic murmur. Chest radiograph and echocardiography followed by contrast enhanced computed tomography (CECT) was done for detailed evaluation. Imaging revealed a large unruptured sinus of valsalva aneurysm arising from left coronary sinus. Diagnosis of Brucella infective endocarditis conformed with Brucella titres. He was planned aortic valve replacement with aortic root reconstruction. But patient expired soon after, possibly due to rupture of the aneurysm. Imaging plays an important role in diagnosing such complex cardiac conditions

INTRODUCTION

Human brucellosis is a multisystemic disease caused by gram-negative coccobacillus of the genus Brucella. Both sexes can be effected with varied manifestation. Any body part can be involved involving the nervous system, cardiovascular, genitourinary, gastrointestinal, but the musculoskeletal system, particularly the spine, is most commonly affected[1]. Cardiac complications of brucellosis occur in less than 2% of patients and generally manifest in the form of endocarditis[2]. Imaging features of thickening of myocardium as well as large vegetation[3]on valves and thickening of the pericardium in cases of pericarditis, with a pericardial effusion. Untreated endocarditis can lead to abscess formation with subsequent developemnt of aneurysms and can progress to rupture leading to dire consequences. Prompt timely diagnosis can help avoid the complications which otherwise can lead to significant mortality and morbidity. Radiologists play a major rolein raising the suspicion of a brucellosis diagnosis in patientsfrom the high-risk demographics in nonendemicareas.

Presentation

40 year old male, goat herdler by occupation presented with High grade, intermittent fever since 25 days associated with night sweats, shortness of breath since 20 days ,Chest pain since 20 days, Generalised weakness since 25 days. On general examination patient was febrile with pulse rate at 88 beats/min, blood pressure recorded 110/70 mm Hg., SPO2: 98 % at room air, he had both lower limbs pitting edema till ankle. On auscultation there was murmer in the aortic area.

With clinical diagnosis of pyrexia of unknown origin, initial investigation workup included COMPLETE BLOOD PICTURE: Hb-10 gm/dl, WBC-9000 (N70, L20, M8, E2, B0), Platelet count – 17,000 per cu.mm
CHEST X RAY- Normal study
WIDAL TEST: 1:20 dilutions
Dengue IgM, IgG – Negative
S.creat- 9.0 mg/dl
USG abdomen and pelvis- Normal study
2D ECHO (day 2) - Bicuspid aortic valve present, vegetation of size 2*1.8 cm noted over aortic valve Repeat 2DECHO (day 6) showed increase in size of vegetation over aortic valve from 1.8 cm to 2.5 cms

Patient was subjected to contrast enhanced the cardiac computed tomography for optimal evaluation of the vegetations.
CARDIAC CT- Multiple calcifications noted in region of aortic valve ,suggestive of calcified aortic valve.Irregular hypodense

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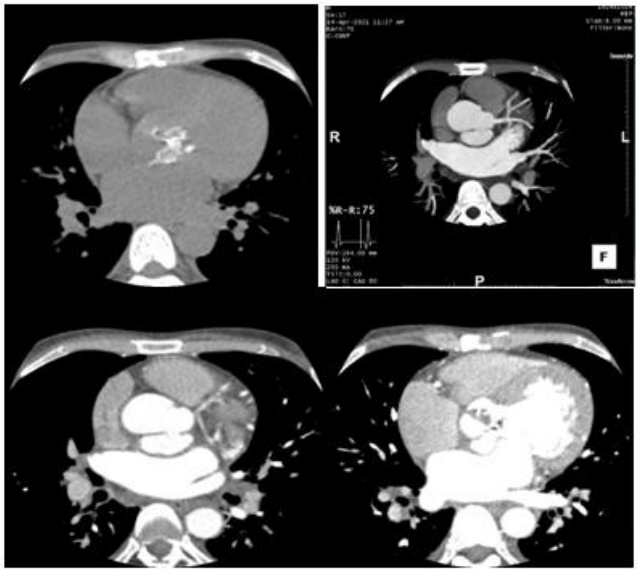
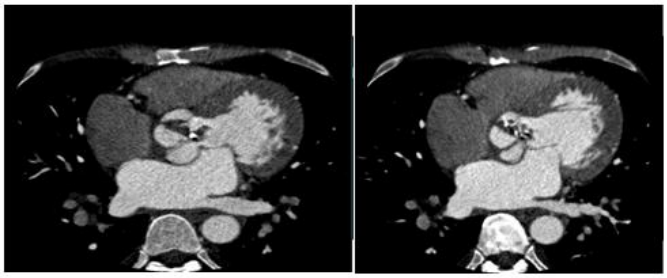
non enhancing components noted in the region of aortic valve measuring 16*10*10 mm, predominantly along right coronary cusp suggestive of vegetations. A large contrast filled outpouching noted from the sinus of valsalva arising from left coronary sinus measuring 32*16*16 mm causing indentation on left atrium. A diagnosis of sinus of Valsalva aneurysm was given. The Neck of aneurysm measuring 13 mm in axial and 17mm in sagital plane. Aorta at level of sinus of valsalva measures 4.5 cms

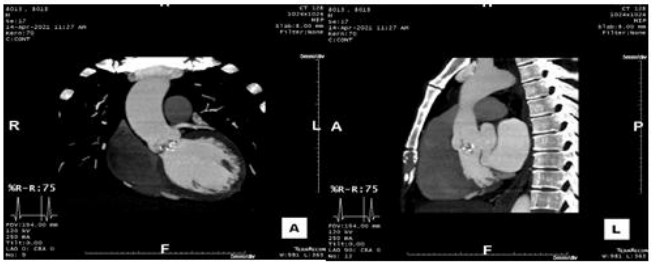
Also on the contrast enhanced CT visualised sections of abdomen showed Splenic and renal infarcts.



A.Plainct showing calcified vegetations on the aortic valve , B&C. Axial cardiac ct image at the level of root of aorta showing a contrast filled out pouching from the left coronary cusp of aorta and extending in to the space just anterior to the left atrium, D. Axial cardiac ct image at the level of aortic valve showing thick and calcified vegetations on the valve leaflets



E&F.Axial cardiac ct image at the level of aortic valve showing thick and calcified vegetations on the valve leaflets



G.Coronal cardiac ct image showing the thick and calcified vegetations on the valve leaflets, H.Sagittal cardiac ct image showing a contrast filled out pouching from the left coronary cusp of aorta and extending in to the space just anterior to the left atrium and communicating with the left atrium

With unusually large vegetations, negative routine blood work for cause of fever and with background of patient being GOAT HERDLER by occupation clinical suspicion Of BRUCELLOSIS was considered. Soon after serology for BRUCELLA IgM and IgG ELISA was sent and it turned out to be positive with BRUCELLA Standard agglutination test showing titers of 1:2560

Diagnosis

Brucella endocarditis with sinus of Valsalva aneurysm arising from the left coronary sinus

Management

Patient started on doxycycline 100mg BD, rifampicin 600mg OD plus Inj Gentamycin with renal dose adjustment.Patient planned for aortic valve replacement with aortic root reconstruction. But patient expired soon after,possibly due to rupture of the aneurysm.

DISCUSSION

The sinus of Valsalva aneurysm is rare and accounts for about 0.15-3.5% of congenital heart diseases. These aneurysms are three to four times as common in men as in women, and five times as common in Eastern and Asian countries as in Western countries[4,5]. Valsalva sinuses are three subtle dilatations of aortic root wall that arise between the aortic valve annulus and sinotubular ridge and each of thesesinus associated with a corresponding right coronary cusp, left coronary cusp or non coronary aortic valve cusp. These Aneurysms can be congenital or can be acquired while the Congenital aneurysms usually occur due to the fundamental localized weakness of elastic lamina at the junction of aortic media and annulus fibrosis or associated with an underlying deficiency of the normal elastic tissue, such as the Ehlers-Danlos and Marfans syndromes, Acquired sinus of Valsalva aneurysms commonly are caused by bacterial endocarditis, syphilis and the tuberculosis; also by degenerative conditions likeatherosclerosis , cystic medial necrosis; and few can be due to injury from the deceleration trauma.

The right sinus of Valsalva is the most commonly involved (75% – 90%)[6]. The commonassosciated cardiac anomalies include the ventricular septal defects (supracristal type), , bicuspid aortic valve,aortic insufficiency, and less frequently, are thecoronary anomalies. Saccular shape of the aneurysm with Sac originating above the aortic annulus normal sized diameter of the aortic root and ascending aorta[7] are the characteristic features of the sinus of Valsalva aneurysms.,
Valsalva sinus aneurysms rupture most commonly rupture into the right ventricle, followed by the right atrium , rarely into the left-sided heart chambers, pericardium and pulmonary artery or superior caval vein[8].

Recently echocardiography has replaced angiography as the principal technique to diagnose the aneurysm. CT and MR imaging are useful to delineate sinus of Valsalva aneurysm In those patients who have suboptimal evaluation at echocardiography,. MR gives us the advantage of giving the morphological features of the aneurysms without the use of any contrast injection even though the CT depicts the same

structural appearance of the aneurysm but with the use of contrast. Aortic regurgitation can be documented with the help of gradient echo images in MR and also it shows the turbulence within the aneurysm. Cine phase-contrast MR imaging delineates the site of fistula formation and can be used to determine the extent of shunting caused by rupture of the aneurysm[9]. The manifestation of sinus of Valsalva aneurysm varies widely with Unruptured aneurysms are mostly being asymptomatic and in those who symptoms are present, are mostly related to mass effect or aneurysmal rupture on adjacent cardiac structures. Dyspnoea is the most common presenting symptom, seen in about 56% cases while the cardiac murmer being the most common clinical sign.

Therefore, large unruptured aneurysms of the non-coronary sinus of Valsalva may compress the adjacent structures in the mediastinum and these patients may present with symptoms, depending on the structure they compress .Only few cases of large unruptured sinus of Valsalva aneurysm have been found in literature with Brucella endocarditis patients are very very few. The reported cases of sinus of Valsalva aneurysm have usually been associated with ruptured aneurysm andresultant fistula formation with right cardiac chambers or RVOT.

Cardio-pulmonary bypass surgery with excision of aneurysmal sac and the resultant defect will be repaired either by direct patch closure or suturing is the mainstay of the treatment in the unruptured and ruptured SVA. Coexisting lesions will be repaired within the same surgical procedure[10]. Percutaneous transcatheter closure can also be done . If the aneurysmal sac is small and if the patient is asymptomatic, surgery can be defered, while the large sized aneurysms should undergo surgical repair in order to avoid fatal complications.

CONCLUSION

Sinus of Valsalva aneurysm can involve any of the coronary or non coronary sinus of the aortic root, while the Large unruptured aneurysms are rare but can present with with wide spectrum of symptoms and signs and with infective endocariditis being a cause they can also present with long duration of Pyrexia like the present case and also can present with RVOT obstruction and cardiac failure. Computed tomography and cardiac MR are the most important investigations to demonstrate the exact site of origin, extent of lesion in addition to rule out aneurysmal rupture. Surgery is the treatment of choice with patients having relatively good prognosis following repair of the aneurysm

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