Chiari Network: An Incidental Echocardiographic Finding in an Asymptomatic Pregnant Female

Dear Editor,

We report an asymptomatic pregnant woman with Chiari network defect in a routine echocardiogram. The intricacies are discussed. Hans Chiari explained abnormal fibrous lace-like strands spanning from the inferior vena cava (IVC) or coronary sinus valve margins to the crista terminalis region in 1897. He inspired the name of the network. The Chiari network is formed by the incomplete resorption of the right sinus venous valve. It is a congenital abnormality that occurs during fetal development and is relatively uncommon, affecting <2% of the general population.[1] Although it rarely causes symptoms or health problems, it can be observed during regular echocardiography. Antenatal maternal echocardiography is not recommended. However due to enlarging uterus and concomitant anemia, the mothers may have dyspnoea on exertion.[2] This prompts many obstetricians to recommend echocardiograms in otherwise normal mothers. A 27-year-old primigravida with 34 weeks of gestation came to us for a routine echocardiogram. Clinically she was normal with basic investigations within normal limits. We discovered a whip-like structure extending from the IVC opening and freely moving within the right atrial cavity [Figure 1]. There was a trivial mitral regurgitation. The left ventricular and right ventricular functions were normal with normal pulmonary pressure. There was neither an atrial aneurysm nor patent foramen ovale. A clinical diagnosis of the Chiari network was made and the essentially benign nature of the disease was clearly explained and any element of anxiety was taken care of [Video 1].

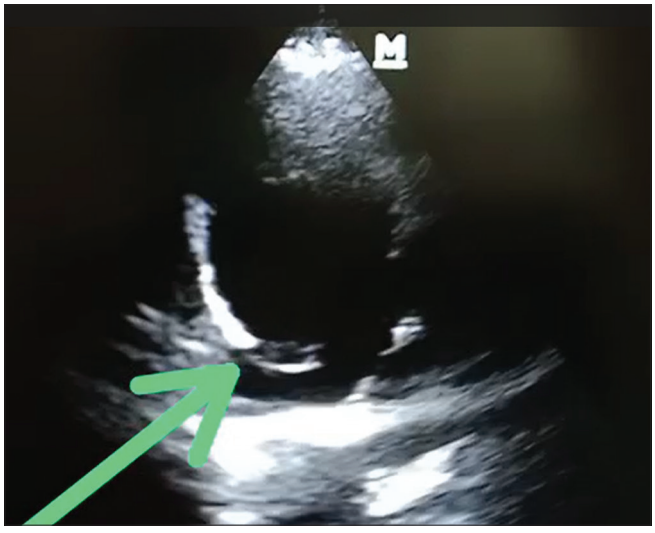

Figure 1: Showing the chiari network(arrow)

In most cases, the Chiari network causes no complications or health issues. However, it can increase the risk of certain conditions in some cases, such as:

Blood clots: The Chiari network can start causing chaos in the blood flow, which could also lead to the formation of blood clots, leading to complications such as stroke or pulmonary embolism.

Infective endocarditis: The presence of the Chiari network can make the heart more vulnerable to bacterial infection, leading to infective endocarditis, a potentially fatal condition.

Cardiac arrhythmias: The Chiari network can disrupt the electrical activity of the heart, causing arrhythmias.

Right heart valve or blood vessel obstruction: the Chiari network can cause the above complication resulting in symptoms such as dyspnoea, fatigue, and chest pain. It is worth noting that these side effects are uncommon and affect only a small percentage of people with Chiari network.[3] Most people with this condition have no major medical issues and do not require treatment. Any sort of chamber catheterization is to be done with caution in the presence of this anomaly.[4] During percutaneous cardiac procedures, the presence of the Chiari network and Eustachian valve can cause catheter/device entrapment, especially for complex electrophysiology (EP) catheters, atrial septum devices, and pacing leads. While a percutaneous approach is usually successful, surgical intervention may be necessary. To prevent this, it is crucial to identify these structures before and during the procedure.[5]

A mild four-chamber dilatation with more changes in the right side with transitory, inconsequential mitral regurgitation with physiological tricuspid, and pulmonary regurgitation are the usual transthoracic echocardiographic observations in a normal pregnancy. These patients are in a procoagulant stage throughout their pregnancy and this effect may have an influence on chamber thrombosis. Finally, extreme anxiety following the revealing about any obstructive pathology in an antenatal mother should be considered and we followed up on the case so far for any problems.[6] Even though there are a few reports of such defects, we report a rare antenatal patient with such structural defects.

To conclude, a benign cardiac disease, in an asymptomatic pregnant female needs proper counseling and a follow-up is needed during delivery and further every year. The disease *per se* does not need any intervention.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and

initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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