

## **IMAGES IN CARDIOVASCULAR ULTRASOUND**

### **Congenital Left Atrial Bands with Atrial Fibrillation.**

Won Young Jang, MD, Woohyeun Kim, MD, Eun Jin Park, MD, Jah Yeon Choi, MD, Cheol Ung Choi, MD, PhD, Hong Euy Lim, MD, PhD, Jin Won Kim, MD, PhD, Eung Ju Kim, MD, PhD, Seung-Woon Rha, MD, PhD, Chang Gyu Park, MD, PhD, Hong Seog Seo, MD, PhD, Dong Joo Oh, MD, PhD and Jin Oh Na, MD, PhD

Cardiovascular Center, Korea University Guro Hospital, Seoul, Korea

**Address for Correspondence:** Jin Oh Na, Cardiovascular Center, Korea University Guro Hospital, 148 Gurodong-ro, Guro-gu, Seoul 08308, Korea Tel: +82-2-2626-1107, Fax: +82-2-863-1109, E-mail: koolup93@gmail.com

Running title: Congenital Left Atrial Bands

Congenital left atrial band (CLAB) is a fibromuscular band observed in the left atrium and observed in 2% of necropsy.<sup>1)</sup> However, the clinical significance has not yet clearly identified and clinically diagnosed cases are very rare.<sup>2)</sup> Histopathologic study showed that the anomalous bands were composed of fibrous and muscular tissues without Purkinje cells.<sup>3)</sup> The fibromuscular bands of the left ventricle or right atrium have been reported to be associated with specific types of tachycardia. CLAB has also been reported to raise the incidence of supraventricular arrhythmia.<sup>1)</sup>

A 76-year-old man with persistent atrial fibrillation was admitted to the hospital for elective electric cardioversion. He had a history of type 2 diabetes and dyslipidemia without other underlying diseases. His transthoracic echocardiogram was unremarkable and transesophageal echocardiography (TEE) was performed for screening intracardiac thrombus before electric cardioversion. In TEE, non-mobile linear structures attached from the interatrial septum in the left atrium were observed and there was no flow limitation or acceleration in the color Doppler study (Fig. 1). There were no significant valvular abnormalities of all cardiac valves. Because flow acceleration in the Doppler study was not observed and three-dimensional imaging study shows a band-like linear structure rather than a membrane, we considered this linear structure as CLAB. Electric cardioversion successfully converted atrial fibrillation to normal sinus rhythm without complication.

There is a case report of two patients with CLAB and cryptogenic stroke suggesting that CLAB could be considered a potential cause of a cardioembolic event.<sup>4)</sup> Therefore, although the association between atrial fibrillation and CLAB is not clearly identified, there is a possibility that atrial fibrillation could be induced from CLAB. However, according to a case report by Eutake et al.<sup>5)</sup> in 2015, electrophysiological study failed potential arrhythmogenic activity of CLAB. Therefore, additional studies on the association of CLAB with atrial fibrillation are needed. In this report, we present the characteristic features of two-dimensional and three-dimensional echocardiograms of CLAB.

## Reference

1. Yamashita T, Ohkawa S, Imai T, Ide H, Watanabe C, Ueda K. Prevalence and clinical significance of anomalous muscular band in the left atrium. *Am J Cardiovasc Pathol* 1993;4:286-93.
2. Baran T, Küçüköğlü MS, Okçün B, Cetin G, Hatemi AC, Uner S. A rare cause of mitral insufficiency: left atrial anomalous band. *Echocardiography* 2003;20:83-5.
3. McNamara WL, Baker LA, Costich K. Asymptomatic congenital anomaly of the heart; congenital muscular cord bridging walls of auricle above center of mitral valve. *Am Heart J* 1947;34:288-90.
4. Ozer O, Sari I, Davutoglu V, Yigiter R, Akkoyun C. Cryptogenic stroke in two cases with left atrial band: coincidence or cause? *Eur J Echocardiogr* 2009;10:360-1.
5. Uetake S, Miyauchi Y, Hayashi M, Shimizu W. Electrophysiological characteristics of a left atrial anomalous muscular band in a case with paroxysmal atrial fibrillation. *HeartRhythm Case Rep* 2015;1:78-81.

Just Accepted

Fig. 1. (A) Two-dimensional transesophageal echocardiography (TEE) showed non-mobile linear structures in the left atrium (white arrow). (B) Three-dimensional TEE showed non-mobile linear structures in the left atrium (white arrow). (C) There was no flow limitation or acceleration on Doppler study

(A)

(B)



(C)

