

IS THE HEART HALF FULL OR HALF EMPTY?

Image in cardiology

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The images shown here are the chest radiographs (CXR) of a 62 year old female who was noted to have an asymptomatic bradycardia on a pre-operative assessment. She had no medical history of note and clinical examination was unremarkable with the exception of crackles at the left lung base for which the CXR was requested. Her resting ECG showed a sinus bradycardia of 44 bpm with no other abnormalities.

Hiatus hernias are relatively common and cause symptoms due to gastro-esophageal reflux. However, various cardiovascular manifestations, due to either direct mechanical effects or by neural mechanisms, have also been associated with hiatus hernias. In view of its location, it can mimic an atrial mass on 2-dimensional echocardiography⁽¹⁾ or manifest as post-prandial syncope (swallow syncope) due to collapse of the left atrium.^(1,2) Pressure effects can cause alterations in blood flow to areas of the atria that may precipitate supraventricular tachyarrhythmias



Postero-anterior CXR demonstrates a double density super-imposed on the cardiac silhouette with a fluid level.

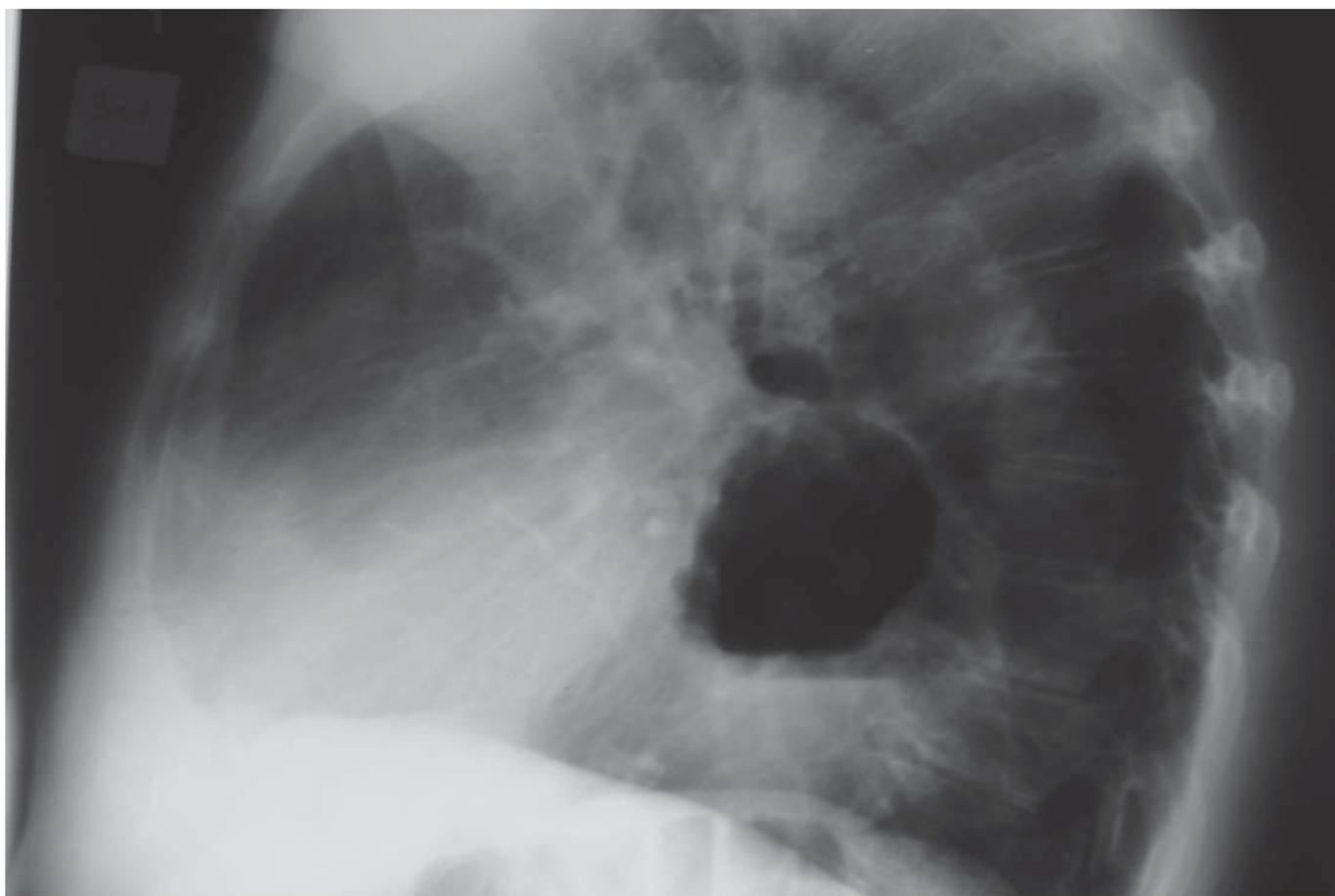
including atrial fibrillation, atrial flutter and ectopic atrial tachycardia.^(3,4,5) These arrhythmias may resolve after surgical correction⁽⁶⁾ as was documented in a case report of recurrent supraventricular extrasystoles in the presence of a large hiatus hernia. It was postulated there, that the extrasystoles were provoked by irritation of the pericardium due to microfistulae originating from two gastric ulcers.

Neural mechanisms include effects of vagal nerve stimulation and the cardioesophageal reflex. Vagal nerve stimulation manifests as sinus bradycardia^(7,8) and various degrees of atrioventricular blocks.⁽⁹⁾ The cardioesophageal reflex, which is not vagally mediated, produces alterations in coronary artery blood flow on a microvascular level in susceptible patients and produce linked angina.^(10,11)

In the further evaluation of our patient, stress ECG confirmed chronotropic competence and structural and functional cardiac abnormalities were excluded on echocardiography. Biochemical tests were normal. Due to the absence of symptoms and the presence of chronotropic competence the patient was reassured and surgical correction of the hiatus hernia was not recommended at this stage.

REFERENCES

1. Ker J, van Beljon J. Diaphragmatic hernia mimicking an atrial mass: a two-dimensional echocardiographic pitfall and a cause of postprandial syncope. *Cardiovasc J South Afr* 2004; 15(4):182-183.
2. Maekawa T, Suematsu M, Shimada T, et al. Unusual swallow syncope caused by huge hiatal hernia. *Internal Medicine* 2002; 41 (3):199.
3. Duygu H, Ozerkan F, Saygi S, et al. Persistent atrial fibrillation associated with gastroesophageal reflux accompanied by hiatal hernia. *Anadolu Kardiyol Derg* 2008; 8(2):164-165.
4. Schilling RJ, Kaye GC. Paroxysmal atrial flutter suppressed by repair of a large paraesophageal hernia. *Pacing Clin Electrophysiol*. 1998; 21(6):1303-1305.
5. Landmark K, Storstein O. Ectopic atrial tachycardia on swallowing. *Acta Med Scand* 1979; 205(3):251-254.
6. Tursi A, Cuoco L. Recurrent supraventricular extrasystolia due to retrocardiac stomach. *Am J Gastroenterol* 2001; 96(1):257-258.
7. Marks P, Thurston JGB. Sinus bradycardia with hiatus hernia. *Am Heart J* 1977; 93(1):30-32.
8. Axelrod FB, Maayan C, Hazzi C, et al. Bradycardia associated with hiatal hernia and gastroesophageal reflux relieved by surgery. *Am J Gastroenterol* 1987; 82(2):159-161.
9. Bortolotti M, Cirignotta F, Labò G. Atrioventricular block induced by swallowing in a patient with diffuse esophageal spasm. *J Am Med Assoc* 1982; 248(18):2297-2299.
10. Chauhan A, Mullins PA, Taylor G, et al. Cardioesophageal reflex: a mechanism for "linked angina" in patients with angiographically proven coronary artery disease. *J Am Coll Cardiol* 1996; 27(7):1621-1628.
11. Fenster PE. Evaluation of chest pain: a cardiology perspective for gastro-enterologists. *Gastroenterol Clin N Am* 2004; 33:35-40.



Lateral CXR shows a retrocardiac density with an air fluid level consistent with a large hiatus hernia.