

Surgical Treatment of Cardiogenic Shock Due to Huge Right Atrial Thrombus

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DEV SAĞ ATRİYAL TROMBÜS NEDENİYLE GELİŞEN KARDİYOJENİK ŞOK VE CERRAHİ TEDAVİSİ

ÖZET

Kardiyojenik şok ve multipl pulmoner mikroemboliye neden olan bir sağ atriyal tromboemboli olgusu, nadir olması sebebiyle bildirilmiştir. Sağ atriyumda serbestçe dolaşan, diyastol sırasında triküspit kapaktan sağ ventriküle prolabe olan ve sağ ventrikül giriş (inflow) ve çıkışında (outflow) tıkanıklığa yol açan düzensiz geniş bir kitle iki boyutlu ekokardiyografi ile tespit edilmiştir. Acil operasyona alınarak kardiyopulmoner baypasa girilmeden, tromboembolik materyal sağ atriyumdan başarıyla çıkarılmıştır. Bu örnek vaka, antikoagülasyon ve trombolizis gibi daha konservatif yöntemlerden ziyade cerrahi müdahalenin ne kadar etkin olduğunu vurgulamaktadır.

Anahtar kelimeler: Sağ atriyal trombus, kalp cerrahisi, iki boyutlu ekokardiyografi

Right-sided intracavitary cardiac thrombus, although very rare, is a recognized predictive factor of high mortality for massive pulmonary embolism. With the availability of two-dimensional echocardiography, this lesion becomes an important and more recognized entity (1). However, there are only few guidelines for the best management of right atrial thrombus, and a controversy exists (2,3). The following case report describes an unusual but fortunate case of right atrial thrombus that presented with cardiogenic shock and successfully treated with immediate surgical intervention without cardiopulmonary bypass.

CASE

A 38 year old man was brought the emergency room with the sudden onset of dyspnea, palpitation, vague precordial chest pain and weakness. He had been transferred from another hospital because of the suspicion of hemothorax. There was a chest tube on his right side which had been inserted 2 hours before. The drainage was about 200 cc

and sero-sanguineous in character. The story of a blunt chest trauma due to a traffic accident 20 days ago without any lung complication was obtained from the hospital's transfer note.

The patient was conscious and oriented. The systolic blood pressure was 65 mmHg, the pulse was regular at 130 per minute, and the respiratory rate was 20 breath per minute. His neck veins were distended. The liver was not enlarged but tender. He had a vague calf tenderness on the right, and Homan's sign was considered positive. No peripheral edema was present.

The ECG showed sinus tachycardia with T wave inversion in leads III and V₁₋₃. The chest x-ray film showed minimal pleural effusion at right sinus. After breathing %50 oxygen by mask, the patient had an arterial PO₂ of 69 mmHg, PCO₂ of 29 mmHg and pH of 7.49. The patient was immediately transferred to the intensive care unit where he remained hypotensive despite appropriate therapy.

Two-dimensional echocardiogram revealed a large, irregular, echo-dense mobile mass in right atrium, prolapsing through the tricuspid valve into the right ventricle during diastole. There was no obvious point of attachment of the mass to the atrial wall. The clinical diagnosis was a right atrial thrombus leading to inflow and outflow obstruction and resulting in hemodynamic compromise.

After an urgent transfer to the operating theatre, an emergency sternotomy was done. A large purse-string suture was threaded around the right atrial appendage for superior vena cava cannulation. When the wall of appendage was incised, a jet of blood was allowed to flush from the opening in an attempt to dislodge the free-floating thrombus. The thrombus partially came out through the opening and reduced the bleeding. It was easily extracted with a forceps without disintegration. Pulmonary artery pressure which was measured directly was found normal (18 mmHg).

The thrombus had the characteristic aspect of embolus with venous origin. It was reddish-brown, and coiled. It varied from 2mm to 1cm in width, and nearly 1 meter in length when it was untied. It appeared to be a cast of a lower limb vein with multiple small side branches (Figure 1,2). The pathologic findings were consistent with thromboembolism.

The postoperative course was uneventful. The colored-Doppler ultrasound of the lower limbs was normal. The lung scan showed perfusion defects in all segments of right upper lobe that consisted with peripherally located microembolisms. After the operation, the patient has been followed periodically under warfarin treatment for a year.

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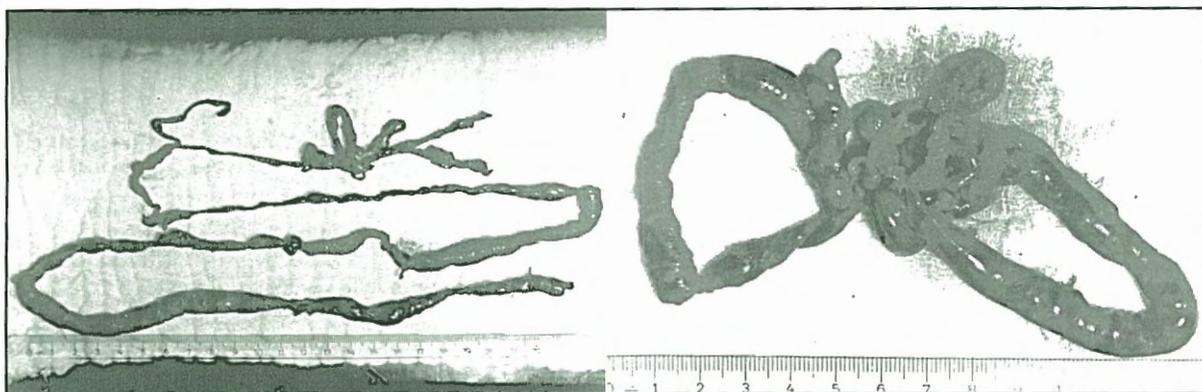


Figure 1. Gross specimen of huge thrombus, extracted from right atrial cavity. It was reddish, brown and like a coil. 2. The coiled thrombus was undone. It varied from 2 mm to 1 cm in width, and nearly 1 meter in length.

DISCUSSION

The clinical presentation of right atrial thrombus is usually subtle, and specific manifestations frequently are lacking (4). Dyspnea is the most frequent symptom and occurs in two thirds of the patients (1). Chest pain, usually precordial, occurs in one third of the patients (1). The physical examination usually is nonspecific, and less than one half of the patients demonstrate signs of hypotension, elevated jugular venous pressure (1). The sudden development of a systolic murmur or position-related cyanosis, in the presence of known deep vein thrombosis, has been said to be suggestive of this complication, but deep vein thrombosis is often clinically silent. The condition is commonly associated with pulmonary embolism. Ante mortem diagnosis of this condition is rare (1,3-5).

The imaging methods, including computerized tomography, digital subtraction angiography, and routine angiography may prove useful in the diagnosis of right atrial thrombus (5-7). However, two-dimensional echocardiography should be the initial diagnostic procedure (1,11).

In most cases pulmonary embolization is completed within 1 to 3 days, sometimes within minutes to hours, after echocardiographic diagnosis (4). The echocardiographic detection of a right thromboembolus, although very rare, should be considered as an emergency without additional invasive diagnostic procedures. Therapeutic alternatives include systemic heparinization, systemic or local thrombolysis, and surgical removal (8). Thrombolysis seems successful for the treatment of patients with right atrial

thrombus, however, recurrent pulmonary embolism may be induced resulting in dire consequences (3,4). Therapeutic choice should be determined according to the particular features of each clinical case. Some reports suggest that a mobile nature and prolapse indicate that the mass is at high risk of breaking loose and passing into the pulmonary vasculature (1). When the diagnosis is made, immediate surgical therapy should be considered.

At the beginning of the operation, the institution of cardiopulmonary bypass was planned and the pump-oxygenator was prepared. Because a dramatic improvement was observed in the hemodynamic parameters, cardiopulmonary bypass was not instituted and pulmonary embolectomy was not performed. This fortunate case appears to be the unique because of delivery of thrombus from incision in appendage of right atrium without cardiopulmonary bypass. This technique may be considered less invasive because it avoids the well-known damaging effects of cardiopulmonary bypass especially on the lung which has already injured by the pulmonary embolism (9). There might be a doubt about the safety of the technique for the possibility of a residual thrombus. However, the gross appearance of the extracted mass helped us to making a comment on disintegration of the clot. In addition, intraoperative two dimensional echocardiography may be used for clarifying the doubtful situations.

We conclude that immediate surgical therapy should be considered when a diagnosis of right atrial thrombus is made. A small chance may be given to the thrombus for spontaneous delivery from a right atrial incision.

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