ACADEMIC JOURNAL OF HEALTH

CASE REPORT

Life-Threatening Anticoagulation in Hughes-Stovin Syndrome with Pulmonary Arterial Thrombosis: A Case Report

ABSTRACT

Hughes-Stovin syndrome (HSS) is a rare variant of Behçet's disease characterized by the presence of pulmonary vascular aneurysms and venous thrombosis. In this case report, our aim is to emphasize the response to medical treatment in a patient currently under our follow-up, whose general condition is progressing well. A 35-year-old male patient with a diagnosis of HSS presented to the emergency department with complaints of chest pain, dyspnea, and hemoptysis. Clinical, laboratory, and radiological findings were consistent with a diagnosis of massive pulmonary arterial thromboembolism. Pulmonary artery pressure (PAP) was measured at 95 mmHg during right heart catheterization. Chronic thrombi were observed in bilateral lower extremity Doppler ultrasonography. Despite the dilemma of anticoagulant treatment due to the presence of aneurysms in the pulmonary artery and the risk of bleeding associated with HSS, intensive care unit administration of heparin infusion was initiated due to the patient's life-threatening massive pulmonary thromboembolism. With the improvement of vital signs, the patient was transferred to the chest diseases service, and treatment with low molecular weight heparin (enoxaparin sodium) was initiated. Furthermore, based on a multidisciplinary council decision, infliximab (intravenous, 5 mg/kg) and riociguat (oral, 2.5 mg three times a day) treatments were planned due to chronic thromboembolic pulmonary hypertension. At the 1-month follow-up after discharge, a decrease in PAP to 65 mmHg was observed, along with improvements in exercise capacity, functional class, and hemodynamics. HSS is a clinical condition with a poor prognostic course and high mortality rates, which can manifest with thrombosis and cardiovascular problems. Treatment consensus remains elusive in this context. Anticoagulants, antithrombotics, and immunosuppressive drugs are recommended. In cases where surgical treatment is not feasible, medical treatment can be a suitable option for clinicians. Particularly, for HSS cases unresponsive to corticosteroids, biological agents should be considered.

Keywords: Behçet's disease, Hughes-Stovin syndrome, pulmonary thromboembolism

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Received: October 10, 2023
Accepted: November 11, 2023

Cite this article as: Duru S, Algın MÖ, Oral B, Yıldırım F, Bölek EÇ, Sarı A, et al. Life-threatening anticoagulation in Hughes-Stovin Syndrome with pulmonary arterial thrombosis: a case report. Acad J Health 2023;1(2):53-57.

DOI: 10.14744/ajh.2023.92486

Hughes-Stovin Syndrome (HSS) is a clinical condition characterized by pulmonary vascular aneurysms and venous thrombosis, emerging as a rare variant of Behçet's disease. The syndrome was named by Dr. John Patterson Hughes and Dr. Philip Stovin when they first described it in 1959 (1, 2). Its distinctive features include the presence of pulmonary artery aneurysms along with concurrent venous thrombosis. However, the etiology and pathophysiology of this rare syndrome are not fully understood, leading to complexities in its treatment process (3, 4).

The rarity of HSS, the diversity of its clinical characteristics, and its status as an infrequent disorder pose significant challenges in terms of diagnosis and treatment. Particularly, the coexistence of pulmonary vascular aneurysms and venous thrombosis complicates the establishment of a clear diagnosis for the syndrome. In this context, the clinical symptoms, laboratory findings, and radiological imaging results of patients should be carefully evaluated together (5, 6).

This article aims to investigate the effectiveness of the medical treatment approach applied to a case diagnosed with HSS. Additionally, by reviewing existing literature and prior studies, it presents a broader perspective on the diagnosis and treatment processes of the syndrome. The rarity of HSS and the diversity of its clinical symptoms contribute to the complexity of disease management. Therefore, the information provided in this article seeks to enhance the understanding of this rare syndrome and contribute to the development of future diagnosis and treatment strategies.

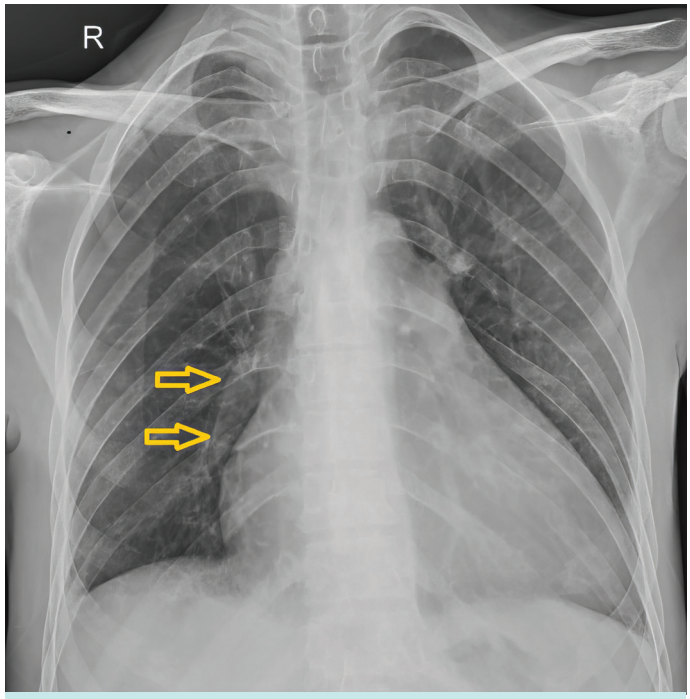

Figure 1: In a posterior-anterior chest radiograph, there is marked enlargement of the right hilum and right main pulmonary artery.

CASE REPORT

A 35-year-old male patient presented to our emergency department with complaints of dyspnea, chest pain, and hemoptysis (100-150 cc per day). Additionally, he exhibited redness, swelling, and pain in the left leg. Initially, he had been diagnosed with pulmonary embolism five years ago at an external medical center and had been under follow-up. Following consultations with the rheumatology and radiology departments, he was eventually diagnosed with a pulmonary artery aneurysm and HSS. It was revealed that the patient experienced recurrent pulmonary arterial embolism 1.5 years after the initial event. The patient had no known history of COVID-19 infection. He had been receiving steroid and immunosuppressive treatment during the period leading up to his presentation at our clinic, although it was noted that he had not been adhering to regular follow-up and treatment appointments. On physical examination, his blood pressure was 90/50 mmHg, heart rate was 110 bpm, body temperature was 36.5°C, and respiratory rate was 28 breaths/min. He had low oxygen saturation on room air (88% with a finger probe). Bilateral infrascapular regions exhibited scattered inspiratory crackles upon lung auscultation. There were no skin lesions present.

Routine blood sampling revealed anemia, and elevated C-reactive protein (CRP, 98 mg/L, upper normal level, 10 mg/L) and erythrocyte sedimentation rate (ESR, 38 mm/h, reference range: 0-15 mm/h). His platelet count and coagulation tests were within normal limits. The white blood cell count (reference range: 4-10 × 10^9/L) was found to be 15 × 10^9/L and leukocytosis was present (1200/mm^3). The viral panel tested for respiratory viral infections, including Influenza A, Influenza B, COVID-19, Respiratory Syncytial Virus, and other viral respiratory pathogens, were negative.

A posterior-anterior chest radiograph revealed marked enlargement of the right hilus and right main pulmonary artery (Fleischner sign).

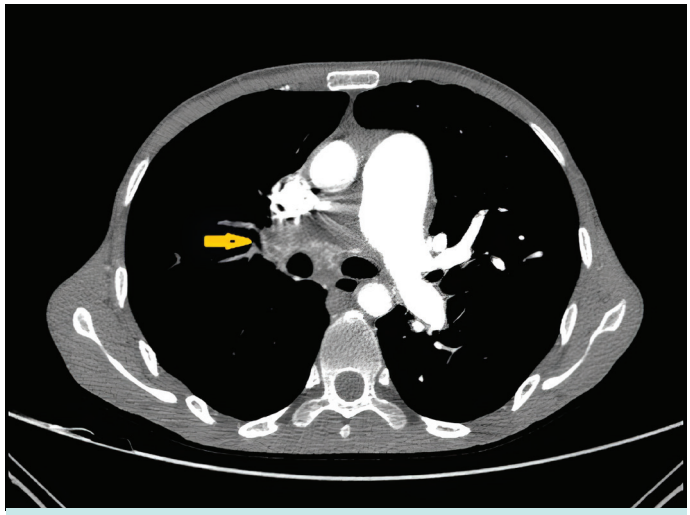

Figure 2a: Pulmonary arterial thrombosis and aneurysm in the main arteries were observed in the transverse sections of computed tomography of the thorax.

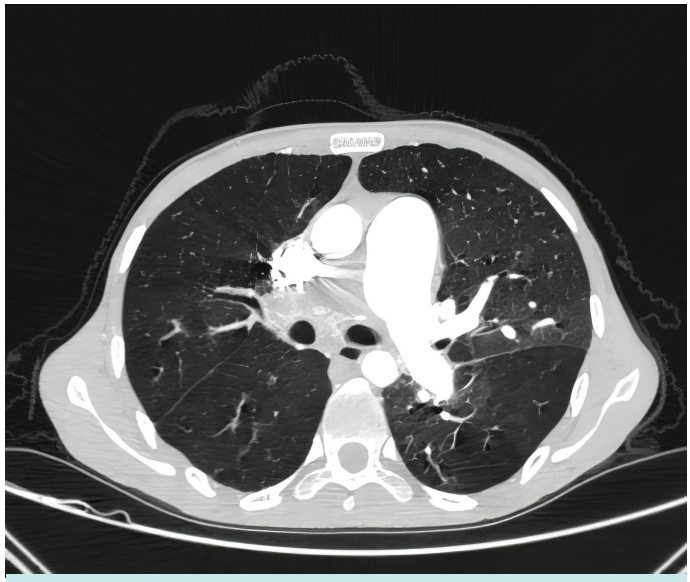

Figure 2b: Pulmonary arterial thrombosis and aneurysm in the main arteries were observed in the transverse sections of computed tomography of the thorax.

A dilated right descending pulmonary artery with a sudden cut-off was also seen (Chang Sign). An increased cardiothoracic ratio was detected (Figure 1). Marked filling defects in the right main pulmonary artery and its branches were detected in pulmonary CT angiography. Additionally, filling defects consistent with proximal pulmonary thromboembolism were also observed in the left pulmonary artery upper lobe segments and subsegmental branches, as well as in the proximal portion of the left main pulmonary artery. There were collateral pulmonary artery vessels that occurred due to chronic pulmonary thromboembolism (Figure 2 a, b).

Echocardiography, performed to assess right ventricular dilatation and strain, demonstrated normal left ventricular function with an ejection fraction of 60%, and right pulmonary artery pressure of 50

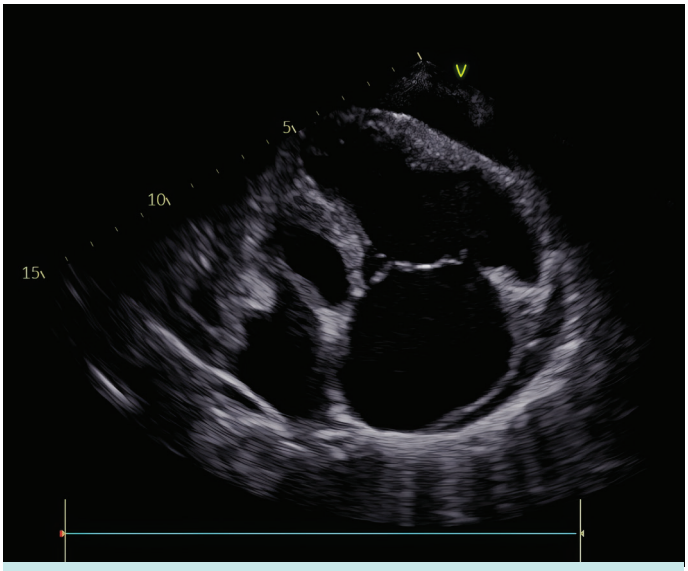

Figure 3a: Expansion in the apical 4-chamber view and pericardial effusion in echocardiography.

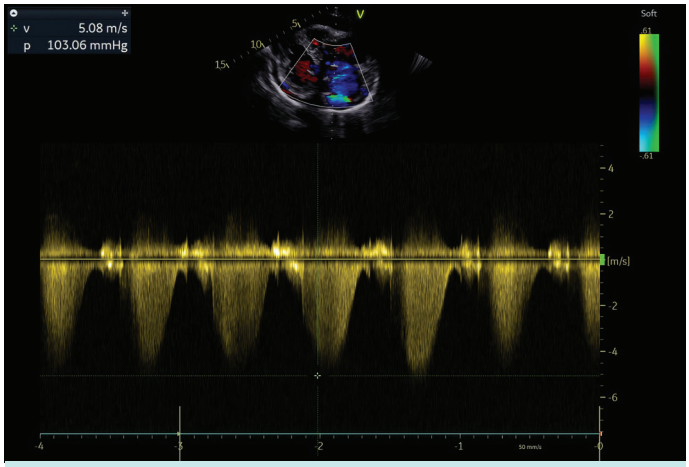

Figure 3b: Elevated pulmonary artery pressure observed in right heart catheterization.

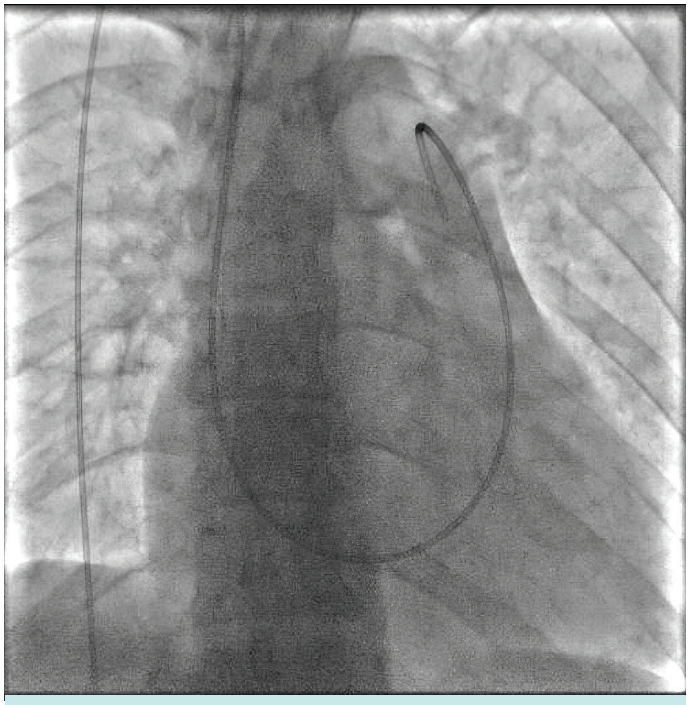

Figure 3c: Right heart catheterization.

mmHg. The right heart chambers were significantly dilated, measuring 0.7 cm at the posterior aspect and 0.8 cm at the apex. Other cardiac chambers showed minimal enlargement, with no evidence of diastolic pressure elevation. Pericardial effusion was present, which did not create any signs of diastolic compression, measuring 1.6 cm adjacent to the right ventricle. Mild tricuspid regurgitation was also noted. A prominent thrombus image was detected extending from the main pulmonary artery to the right pulmonary artery, measuring 2.6 cm x 4.8 cm, and appeared to be mobile.

Abdominal ultrasound was normal. Right heart catheterization revealed pulmonary artery pressures of 98/27/56 mmHg, aortic pressure of 104/76/90 mmHg, left ventricular end-diastolic pressure of 9 mmHg, right ventricular end-diastolic pressure of 16 mmHg, pulmonary vascular resistance (PVR) of 12 Wood Units (WU), cardiac output (CO) of 3.7 L/min, and cardiac index of 2.1 L/min/m^2. These findings were consistent with Group IV pulmonary hypertension (Figure 3 a, b, c). The color Doppler ultrasound of the right and left lower extremity veins revealed a chronic partial thrombotic appearance in the main femoral, superficial femoral, popliteal, and crural veins.

Due to the patient's tachycardia and hypertension, and the initiation of inotropic support, monitoring was initiated in the intensive care unit. In light of the patient's critical condition and the dilemma of anticoagulation due to the presence of pulmonary aneurysms, he was immediately started on a heparin infusion in the intensive care unit. Once stabilized, he was transferred to the chest diseases department, where treatment with subcutaneous low molecular weight heparin (enoxaparin sodium, 60 mg/0.6 ml twice daily) was commenced. Multidisciplinary discussions led to the decision to administer infliximab (5 mg/kg intravenously) and riociguat (2.5 mg orally three times a day) due to chronic thromboembolic pulmonary hypertension. A treatment plan was initiated with intravenous administration of 1 gram of methylprednisolone per day for three consecutive days, followed by a transition to an initial dosage of 1 mg/kg/day administered intravenously. Subsequently, the steroid regimen was gradually tapered down over the course of a month through oral dosages. The patient is currently on maintenance therapy with infliximab and riociguat.

Due to the patient's young age and in addition to medical treatment, consultation with the Cardiovascular Surgery Clinic was sought, and the decision to perform a bilateral pulmonary thromboendarterectomy was made. Pulmonary thromboendarterectomy was carried out, extending to the left main and the segment levels following right pulmonary arteries (Figure 4). After hospital discharge, the patient's condition was closely monitored in our clinic. At the 1-month follow-up, significant improvements were observed. The pulmonary artery pressure had decreased to 65 mmHg, exercise capacity had improved, functional class had been upgraded, and hemodynamics had normalized.

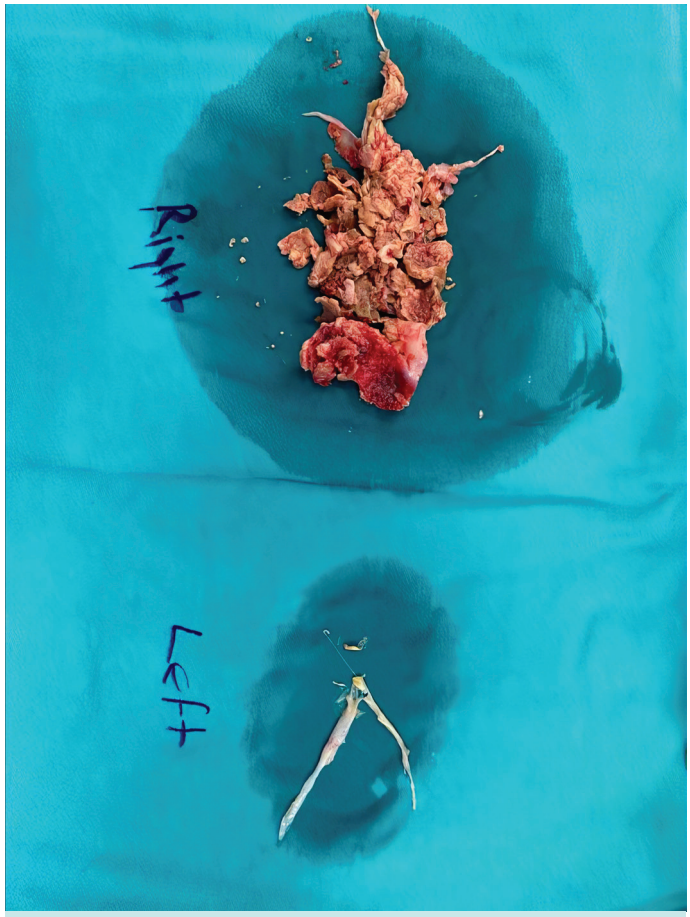

Figure 4: Pulmonary endarterectomy material of the patient.

DISCUSSION

Hughes-Stovin syndrome is a rare variant of Behçet's disease characterized by pulmonary vascular aneurysms. The rarity of this disease and the convergence of various clinical features can present challenges in diagnosis and treatment. The aim of this study is to evaluate the effectiveness of the medical treatment approach in a case diagnosed with HSS and to contribute to the literature.

Our case involves a 35-year-old male patient who presented to the emergency department with chest pain, dyspnea, and hemoptysis. Clinical, laboratory, and radiological findings were consistent with a diagnosis of massive pulmonary thromboembolism. High pulmonary artery pressure (PAP) was identified through right heart catheterization, indicating a life-threatening condition that necessitated urgent medical intervention. Approximately a quarter (around 25%) of individuals diagnosed with HSS exhibit a combination of arterial and venous occlusions, along with vascular thromboembolism, arterial aneurysms, and nonspecific vasculitis. Among the reported cases, 7% demonstrate arterial involvement, 25% exhibit venous involvement, and the majority (68%) present with a combination of both arterial and venous issues (7, 8). In the present case, the patient displayed arterial and venous aneurysms. The most commonly observed manifestations encompass pulmonary vascular lesions as well as deep vein thrombosis in the lower extremities. Aneurysms can manifest as singular or multiple, occurring unilaterally or bilaterally. In this case, deep vein thrombosis was bilaterally present.

Anticoagulation therapy poses a risk of bleeding in conditions like HSS. However, in cases of critical conditions such as massive pulmonary thromboembolism, the life-saving importance of anticoagulation cannot be overlooked. In this case, normalization of vital signs was successfully achieved through heparin infusion in the intensive care unit. Subsequently, treatment continued with low molecular weight heparin (enoxaparin sodium).

As a result of a multidisciplinary council decision, infliximab and riociguat treatments were planned due to the patient's chronic thromboembolic pulmonary hypertension. At the 1-month follow-up after treatment, a significant decrease in pulmonary artery pressure and improvement in the patient's functional status were observed.

Hughes-Stovin syndrome is a rare condition associated with high mortality rates and lacks a clear consensus on treatment. Therefore, treatment should be tailored considering the individual characteristics of each case. Anticoagulant, antithrombotic, and immunosuppressive therapies are recommended in the literature. Medical treatment is an appropriate option for cases where surgical intervention is not feasible. Especially in cases unresponsive to corticosteroids and cyclophosphamide, anti-TNF inhibitors should be considered (9, 10). In our case, we applied this treatment plan. In conclusion, this case example underscores the effectiveness of the medical treatment approach applied to a patient diagnosed with HSS. However, more cases and long-term follow-up are necessary. This study can be considered a step towards developing a better understanding of disease management.

CONCLUSION

Hughes-Stovin syndrome remains a complex and rare condition with diverse clinical features and a lack of consensus on treatment strategies. The etiology and pathophysiology of HSS are unknown, and anticoagulation still presents a dilemma. In our case, a patient diagnosed with Hughes-Stovin syndrome presented with massive embolism, where anticoagulation was mandatory. However, due to the presence of pulmonary aneurysms, it could have been fatal due to potential bleeding. We present a rare case of HSS being treated with anticoagulation, although it is typically contraindicated. This case underscores the importance of prompt and multidisciplinary management in such scenarios. The effective combination of anticoagulation, immunosuppressive therapy, and targeted treatments tailored to individual patient characteristics can lead to favorable outcomes. Continuous monitoring and long-term follow-up are crucial in optimizing the management of HSS and improving patient prognosis. In summary, more studies are required to develop effective treatment strategies for pulmonary embolism in patients with HSS.

Acknowledgments: We extend our gratitude to the multidisciplinary team members for their collaborative efforts in managing this complex case and for their valuable insights.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – S.D., M.Ö.A., B.O., F.Y., E.R., E.Ç.B., A.S., K.H., B.G., S.D.İ.; Design – S.D., M.Ö.A., F.Y., E.Ç.B., B.G., A.S., K.H., B.O., E.R.;

Supervision – S.D., S.D.İ., E.Ç.B., K.H., B.O., A.S., E.R., B.G., M.Ö.A., F.Y.; Fundings – S.D., F.Y., S.D.İ., E.Ç.B., K.H., B.G., E.R.; Materials – S.D., B.O., S.D.İ., B.G., F.Y., E.Ç.B., E.R.; Data Collection and/or Processing – S.D., B.G., S.D.İ., E.Ç.B.; Analysis and/ or Interpretation – S.D., B.O., B.G., K.H.; Literature Search – S.D., A.S., M.Ö.A., F.Y.; Writing – S.D., B.O., S.D.İ., K.H.; Critical Reviews – S.D., K.H., F.Y., E.Ç.B., A.S., B.O., E.R.

Conflict of Interest: The authors have no conflict of interest to declare.

Funding: The authors declared that this study has received no financial support.

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