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**Case Report**

# An unusual case of pulmonary embolism following ayurveda massage therapy

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## ABSTRACT

Ayurvedic treatments, including traditional massage therapies, are widely used for their holistic health benefits. However, improper techniques may pose serious health risks. We present the case of a 59-year-old female with diabetes, dyslipidemia, and hypertension who developed a massive pulmonary embolism (PE) following a month-long Ayurvedic lower leg massage for varicose veins. She presented with exertional dyspnea and had a history of prolonged immobilization. Clinical evaluation, elevated D-dimer levels, echocardiography findings of right ventricular dysfunction, and CT pulmonary angiography confirming bilateral pulmonary artery thrombi led to the diagnosis of PE. She was managed with oxygen therapy and anticoagulation, transitioning from low-molecular-weight heparin to direct oral anticoagulants. The patient showed clinical improvement and was discharged on anticoagulation therapy. This case highlights the rare but significant risk of venous thromboembolism (VTE) following deep tissue massage, likely due to endothelial damage and venous stasis. It underscores the importance of careful patient evaluation before engaging in alternative therapies, particularly in individuals with predisposing risk factors. Raising awareness among practitioners and patients regarding the potential cardiovascular risks of unregulated Ayurvedic treatments is crucial for preventing such adverse events.

**Keywords:** Pulmonary embolism, Massage therapy, CTPA

## INTRODUCTION

Traditional Ayurvedic treatments are widely regarded for their holistic approach to health and wellness, often incorporating natural remedies, herbal treatments, and various therapeutic techniques such as massages. One common Ayurvedic therapy involves the application of oils and herbs through specific massage techniques designed to balance the body's energies and promote healing. While generally considered safe when performed correctly, these treatments carry certain risks, particularly when conducted without proper knowledge and technique.

PE is a potentially life-threatening condition that usually arises from deep vein thrombosis (DVT).[1] Improper massage practices, especially those involving intense pressure or incorrect techniques, may dislodge a pre-existing clot, allowing it to travel to the lungs and cause obstruction. Though rare, PE can be a serious complication of certain Ayurvedic treatments, underscoring the need for proper training and caution.

Here, we present a case of massive PE in a female patient following a traditional lower leg massage-an event that has been rarely documented in medical literature.

## CASE REPORT

A 59-year-old woman with a history of diabetes mellitus (DM), dyslipidaemia (DLP), and hypertension (HTN) presented with a one-week history of exertional dyspnea,

classified as grade 3 on the modified medical research council (MMRC) scale. She denied experiencing fever, chest pain, palpitations, sweating, paroxysmal nocturnal dyspnea (PND), daytime lethargy, or snoring.

She had been undergoing Ayurvedic treatment, including prolonged bed rest for varicose veins in both legs, along with traditional deep massage therapy.

Upon evaluation at the pulmonology outpatient department (OPD), her vital signs were as follows: oxygen saturation of 92% on room air, pulse rate of 90 beats per minute, respiratory rate of 22 breaths per minute, and blood pressure of 110/70 mmHg. She was afebrile. Respiratory examination did not reveal any significant findings. Given her history of nearly one month of immobilization, a provisional diagnosis of PE was made.

Initial blood investigations, including a complete blood count (CBC), renal function test (RFT), and liver function test (LFT), were within normal limits. Arterial blood gas (ABG) analysis was also within normal range. A chest X-ray (CXR) showed increased vascular markings (Figure 1).

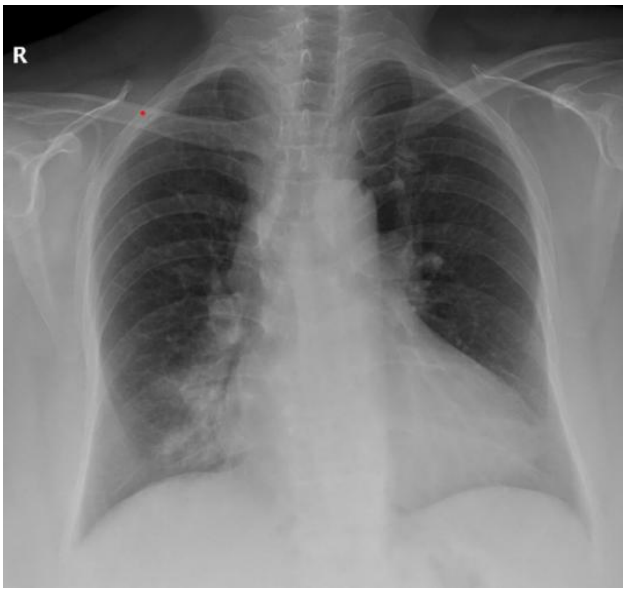


**Figure 1: CXR of increased broncho-vascular markings, cardiomegaly and pulmonary artery prominence on right side.**

Her D-dimer level was elevated (2,450 ng/mL). Echocardiography (ECHO) revealed right ventricular (RV) dysfunction, moderate to severe pulmonary arterial hypertension (PAH), adequate left ventricular (LV) systolic function, and no regional wall motion abnormalities (RWMA). Computed tomography pulmonary angiography (CTPA) confirmed an intravascular filling defect in the right and left pulmonary arteries, including their lobar and segmental branches, suggestive of PE (Figure 2).

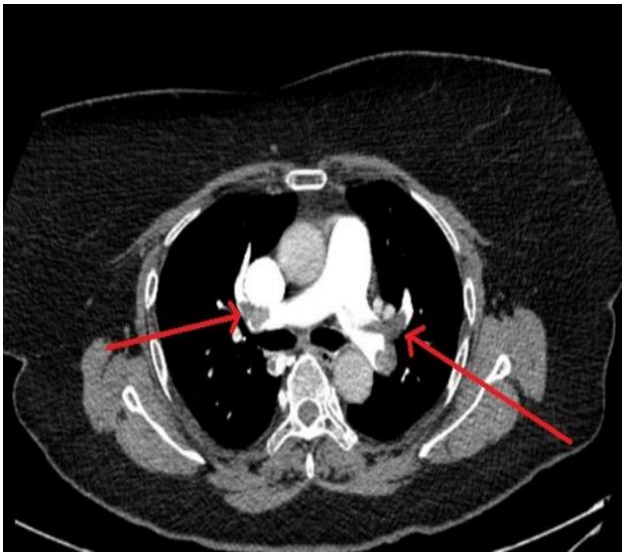

**Figure 2: CTPA of intravascular filling defect in right and left pulmonary arteries.**

The patient was managed in the intensive care unit (ICU) with oxygen support and low-molecular-weight heparin (LMWH). She was later transitioned to direct oral anticoagulants (DOACs). Her clinical condition improved, and she was able to maintain oxygen saturation on room air. She was discharged in stable condition on anticoagulant therapy and scheduled for follow-up care.

## DISCUSSION

PE typically originates from DVT in the lower extremities. Together, PE and DVT constitute the spectrum of VTE. The symptoms of PE vary, and the classic triad of cough, chest pain, and dyspnea may not always be present.[1]

Virchow's triad-hypercoagulability, venous stasis, and endothelial injury-explains the risk factors for VTE. Acquired risk factors include prolonged immobilization (e.g., bed rest for more than three days or travel exceeding four hours), recent surgery, malignancy, indwelling venous catheters, obesity, pregnancy, smoking, and oral contraceptive use.[1-3] Cases of DVT and PE following leg massages have been documented in the literature.[4-7] The underlying mechanism may involve mechanical shear stress on venous walls, leading to endothelial cell damage, platelet aggregation, and thrombin-mediated fibrin clot formation. Most individuals undergoing such traditional treatments do so without prior clinical evaluation, highlighting the need for caution before resorting to alternative medicine.

Diagnosing PE can be challenging, particularly in patients with comorbidities. The diagnostic approach involves assessing clinical likelihood, electrocardiography (ECG), chest X-ray, laboratory tests (including D-dimers and markers of cardiac injury and overload), and imaging

techniques such as CTPA or ventilation-perfusion scanning. Echocardiography may also aid in diagnosis.

Management of PE depends on the patient's hemodynamic status and risk profile. Thrombolysis is recommended for hemodynamically unstable patients at high risk. If thrombolysis is contraindicated or ineffective, surgical pulmonary embolectomy or percutaneous catheter-directed therapy may be considered. Although reperfusion therapy can be lifesaving, it is not indicated for all PE patients due to the associated bleeding risk.[8,9]

Long-term management includes anticoagulation therapy for at least 3-6 months. The decision to extend treatment beyond this period depends on the risk of recurrence. In patients with PE due to a transient or treatable risk factor, discontinuation of anticoagulation at three months is recommended.[9] The use of inferior vena cava filters is reserved for patients with absolute contraindications to anticoagulation. However, they do not appear to reduce the risk of PE recurrence or PE-related mortality.[9]

## CONCLUSION

In conclusion, this case highlights a rare but serious complication of traditional Ayurvedic massage therapy, where a massive PE occurred following a lower leg massage. It underscores the importance of recognizing the potential risks associated with such therapies, especially in patients with pre-existing comorbidities, and the need for appropriate clinical evaluation prior to engaging in alternative treatments. Timely diagnosis and management, including anticoagulation therapy, are crucial in improving patient outcomes, as demonstrated in this case. This report emphasizes the need for further research and awareness regarding the potential cardiovascular risks linked to improper Ayurvedic treatments by non-experts, to ensure patient safety and mitigate adverse events.

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