

## Thrombectomy and Lung Resection for Massive Left Pulmonary Embolism in a 30 Years Old Man in Yaoundé, Cameroon

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### Abstract

Pulmonary embolism is a well-recognized clinical entity with significant morbidity and mortality. It is called massive when it extends over more than half of the vascular bed. In the past, surgical treatment was the last therapeutic option but more and more surgical treatments are performed in several centers with few side effects and a lower mortality rate. Pulmonary embolectomy has never been attempted in Cameroon. We are reporting herein the first case of massive pulmonary embolism in a 30 years old man complicated by lung gangrene treated by thrombectomy and lung resection.

**Keywords:** Pulmonary embolism; Embolectomy; Thrombosis; Thrombectomy; Gangrene; Infarction; Cameroon

### Introduction

Pulmonary embolism is a well-recognized disease with significant morbidity and mortality. The mortality in Europe is estimated to be around 300,000 deaths/year [1] and most cases are diagnosed in post mortem due to the non-specificity of the clinic [2]. Pulmonary embolism is called massive when it extends over more than half of the vascular bed. It is a real health problem with a mortality rate of about 50% for pulmonary artery obstruction of more than 50% despite advances in the diagnosis and treatment [2]. In the past, surgical treatment was the last therapeutic option and only indicated in patients with cardiopulmonary arrest, fibrinolytic treatment failure or contraindication to fibrinolysis. From there, the approach of massive pulmonary embolism has recently been modified and surgical embolectomy is performed in several centers with few side effects. Prospective studies comparing surgical treatment with drug therapy concluded that mortality was higher among medically treated patients [3,4].

Fibrinolytic treatment, intravascular thrombectomy, are not available in Cameroon, The only treatment option is low molecular weight heparin followed by oral anticoagulants. Thoracotomy and thrombectomy or embolectomy has never been attempted in our environment as one need cardiac bypass to safely realize these procedures. We are reporting the case of a 30 years old man with life-threatening left pulmonary artery embolization complicated by left lower lobe infarction and gangrene, who was successfully managed by a thoracotomy, thrombectomy and left lower lobectomy.

### Case Report

A 30-year-old patient was referred to us for the management of acute respiratory distress associated with chest pain. Two months before the present transfer, the patient was victim of a road accident, which resulted in a closed fracture of the left leg. Fracture for which he chooses to be treated by traditional massages with no improvement, the patient was walking with crutches because of delayed-union at the level of the left leg fracture. He experienced a sudden onset of a left basithoracic pain increased during inspiration associated with dry cough and dyspnea. He first attended a traditional doctor with no

improvement. Three days later he developed sudden severe dyspnea, with greasy cough and heavy expectorate, moderate fever, asthenia, dizziness which motivated a consultation at one of the city's hospitals who referred him immediately to us as a tertiary center for intensive care management after CT scan and chest radiography were done. The past medical history was not significant. On arrival thru the emergency room, the patient had a Glasgow Coma Scale of 13/15, he was agitated, the Blood pressure was 150/80, pulse rate 126/min, and respiratory rate 32/min with an SPO<sub>2</sub> of 66% on room air, the temperature was 39°C. He presented a deep pallor of the mucous membranes, cold extremities. No abnormalities were noted during the cardiac clinical examination and auscultation. There was a decrease in the thoracic ampliation, there was left basithoracic crackles and dullness in the lower half. He still complained of pain on the left leg which was unstable and the 2 ends were mobile and he was unable to walk on it. There was no clinical sign of deep vein thrombosis. The chest X-ray showed a left pleural effusion (Figure 1), the tomodensitometry of the chest showed a left pulmonary artery embolism, massive pleural effusion with resultant atelectasis (Figure 2).

The patient was placed on 4 l/min of oxygen, IV levofloxacin, a left chest tube was inserted and drained 2 liter of hematic fluid. The blood work showed WBC 15000/ml Hemoglobine 6.3 g/dl with a MCV of 65. Platelet count 465000/ml, prerenal azotemia with elevated urea of 0.65 g/l and serum creatinine of 16.5 g/l. The d-dimeres were 3353 U/l. The Coagulation profile showed a prothrombine time of 45% with an INR of 2.2, the ionogram was normal. The patient was placed on enoxaparin 8000 u/12 hours, transfused 2 unit of blood the first day and one unit the next day.

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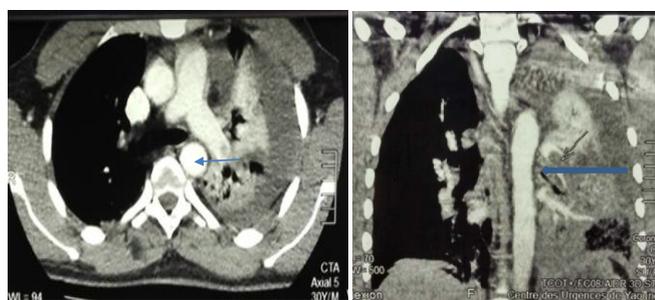
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**Figure 1:** Chest radiography at the time of admission showing a massive left pleural effusion.



**Figure 2:** (a and b) Transverse and coronal section after a tomodesitometry of the chest: showing a massive pleural effusion, collapsus of the lung. A thrombus in the left pulmonary artery (arrow).

There was no improvement under that treatment, the respiratory distress became worse and the oxygen was increased to 8 l/min with a resultant  $SPO_2$  of 85%. He was coughing more and more with heavy sputum. On the fourth day after admission, a decision was made to do a thoracotomy and embolectomy as an attempt for survival.

We performed a left posterior thoracotomy thru the 5<sup>th</sup> intercostal space. Findings were fibrino purulent effusion, with a gangrenous left lower lobe. The upper lobe was normal. We performed a left lower lobectomy and we removed easily the clot from the pulmonary artery thru the lower lobe arterial stump before suturing. The patient greatly improved from the immediate postoperative period, he was placed on 4 l/min of oxygen which was stopped the next day and the patient transferred to the surgical floor. Enoxaparin was continued postoperatively with per os levofloxacin. Coumadin was introduced at post-op day 2 and enoxaparin discontinued at postop day 5. A Doppler ultrasound of the veins of the lower limbs was done in the post-operative period and was noncontributory (it was not possible the day of admission because the patient was too unstable and unable to be wean off oxygen). The culture of the pleural fluid was negative. The pathology report was compatible with pulmonary infarction and necrosis, with bronchial abscess. The thoracic drain was removed 5 days after surgery and the patient discharged at post-op day 10 on oral Coumadin. The postoperative control Chest X ray on fifth postop day, after drain ablation is shown in Figure 3. The patient returned to Guinea 2 weeks after surgery. The patient is currently doing well. He talk to us on the phone last week, actually he calls us every other week. He said that the left leg fracture has also healed and he is walking normally.

## Discussion

Pulmonary embolism characterizes the total or partial obstruction



**Figure 3:** (a and b) Anteroposterior and lateral views of a chest radiograph done on the fifth postop day after drain removal.

of the pulmonary artery or its branches by a blood clot coming from the venous circulation (lower limbs phlebitis in nearly 90% of cases). The diagnosis of massive pulmonary embolism in this case was based on an acute respiratory distress syndrome with pathological chest CT results showing the thrombus in the distal portion of the left pulmonary artery. Cardiac ultrasound was not performed due to financial constraints presented by the patient and the fact that he was too unstable to be mobilized. In a massive pulmonary embolism, part of the lung is no longer vascularized, leading to hypoxia with desaturation of the hemoglobin, the consequence of which are tachypnea with hypocapnia and alkalosis. Arterial obstruction may thus be accompanied by a pulmonary infarction, i.e. ischemic necrosis of the pulmonary parenchyma. This occurs when the embolus is distal as in our case. These pathophysiological mechanisms explain the symptomatology presented by our patient, as well as the findings per operative. When pulmonary artery obstruction is greater than 50%, the mortality rate approaches 50% [3], and depending on the series, this rate after surgical embolectomy varies from 16-46% with an average of 26% [5]. Surgical thrombectomy is becoming more and more performed although still reserved for massive or submassive pulmonary embolism with severe hemodynamics compromise or right heart failure. Prospective studies comparing surgical and medical treatment reveal a higher rate of mortality and recurrence of pulmonary embolism in medically treated patients [6]. In the past, surgery was the last therapeutic option [6], but surgical treatment as the main treatment is increasingly used and shows good long-term results [7].

Our patient presented a thrombus at the distal portion of the left pulmonary artery extending to the lower lobe branch which has resulted in a lower lobe infarction (the surgery was done 8 days after the onset of symptoms). We have no explanation of the origin of the embolus it may be from the non-unioned bone since the venous Doppler was negative or may have been caused by daily traditional massage.

Although thoracic surgery and lung resection is regularly done in Cameroon, pulmonary embolectomy has not been done in our country, many patients with pulmonary emboli died. Only few patients have survived massive pulmonary embolism in our environment. We have reported one of these cases in which the diagnosis was revealed by autopsy, following lower limbs trauma and low molecular weight heparin treatment [8]. This is the first case in which we have done embolectomy.

The hypochromic anemia was due to loss thru the digestive system, because the patient complaint of dark stool, and he was taking self-prescribed anti-inflammatory drugs brought on the road for pain. He has ongoing GI bleeding that was not investigated because of instability. The anemia responded to transfusion. And the stool cleared out.

The only medications against venous thrombosis or embolization available in our environment are low molecular weight heparin and oral anticoagulants. Fibrinolytic drugs are not common and endovascular procedures or interventional radiology in general have not been implemented. We did the surgery as a last resort, and it was successful. With this case we may offer surgery in those patients who do not improve after a well conducted medical treatment and who present a distal main trunk embolization as in our patient because the cardio-pulmonary bypass is not available.

## Conclusion

The case presented in this paper demonstrates the effectiveness and feasibility of surgical treatment for massive pulmonary embolism in an environment with inadequate infrastructure.

## Competing Interest

Authors declared no conflict of interest.

## Consent

The patient has given an informed written consent before being discharged from the hospital for publication, and have accepted on the phone that the case will be reported.

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