

Management Dilemma of Pulmonary Embolism Associated with Haemorrhagic Stroke in Low-Income Settings: A Case Report

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How to cite this paper: Mfeukeu-Kuate, L., Nganou-Gnindjio, N., Tabugua, A.T., Yemele, H.K., Wandji, B.K., Jingi, A.M., Koulsoumi, O., Esoh, C.E., Bekoe, J., Danwe, D. and Menanga, A. (2022) Management Dilemma of Pulmonary Embolism Associated with Haemorrhagic Stroke in Low-Income Settings: A Case Report. *Case Reports in Clinical Medicine*, 11, 160-166.

<https://doi.org/10.4236/crcm.2022.115024>

Received: April 11, 2022

Accepted: May 17, 2022

Published: May 20, 2022

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Abstract

Management of thromboembolic disease in an acute bleeding circumstance like haemorrhagic stroke is a real challenge in low-income settings. We report a case of a 37-year-old woman who was treated in the neurologic service for a haemorrhagic stroke that occurred one week after a caesarean section. Six weeks after her discharge, she presented signs of bilateral deep vein thrombosis and pulmonary embolism confirmed by venous Doppler ultrasound and a thoracic angiography respectively. Transthoracic cardiac ultrasound showed right ventricular dysfunction with a clot in the right atrium. Considering the high risk of complications due to anticoagulant treatment, surgical treatment and a vena cava filter were proposed. But it could not be performed because it was not accessible. After a multidisciplinary consultation meeting and informed consent of the patient, anticoagulant treatment was the preferred expectation. Three weeks after the beginning of the anticoagulant therapy, the evolution was favourable, and the patient was discharged.

Keywords

Dilemma, Pulmonary Embolism, Haemorrhagic Stroke, Cameroon

1. Introduction

Venous thromboembolism disease (VTED) includes deep vein thrombosis of the

leg or pelvis, and its complication, pulmonary embolism [1]. It is a complex disease, involving interactions between acquired or inherited predispositions to thrombosis [2]. It counts among the most feared complications in hospitalized patients [3]. In the case of pulmonary embolism (PE), if untreated, it is associated with a significant mortality rate as high as 30% whereas the death rate of diagnosed and treated PE is 8% [4].

Venous thromboembolism disease occurred in 20% - 50% of patients hospitalized for stroke [5]. This association is mainly due to the prolonged immobilization that leads to clot formation. As a common complication in hospitalized patients with stroke, it is associated with substantial morbidity, mortality, and health care cost [3]. In the case of haemorrhagic strokes, there is a real therapeutic challenge because anticoagulant treatment is generally contraindicated. Some alternatives to anticoagulant treatment such as cava filtering or surgical thromboembolisation are recommended. However, these therapeutic modalities are not always available in the context of limited resources. We, therefore, report this case of VTED in the context of haemorrhagic stroke, to discuss the challenges of management in a context where instrumental or surgical treatment is not always available.

2. Case

A 37-year-old female patient presented to the emergency department with sudden onset of dyspnea associated with right lower limb pain. Her history included a right parietal haemorrhagic stroke with left hemiparesis sequelae 6 weeks earlier, which occurred after a caesarean section indicated for placenta praevia. Brain MRI showed a right parietal hematoma, with no underlying tumor or arteriovenous malformation (Figure 1).

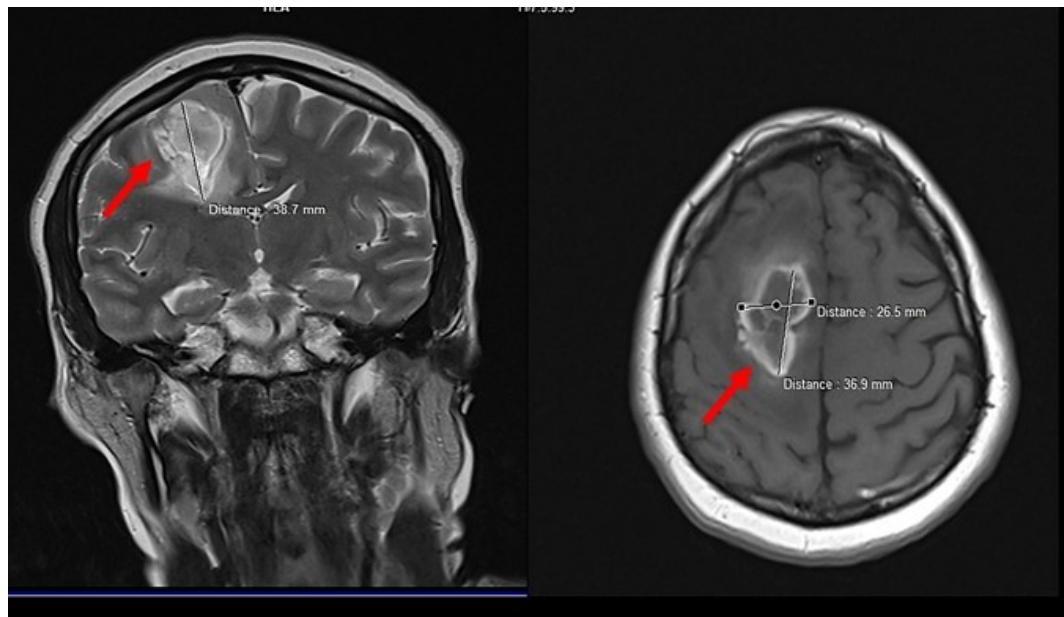


Figure 1. Frontal and axial plane of a right-sided parietal hematoma with a volume of 19 ml (Arrows).

It should be noted that during the hospitalization for this stroke, she received mechanical prevention of VTE (wearing compression stockings). On admission, the patient was conscious, with normal blood pressure. She had signs of respiratory distress, right heart failure, and signs of bilateral DVT. The Thoracic Computerized tomography scan showed a bilateral proximal pulmonary embolism (**Figure 2**). Venous Doppler ultrasound of the lower limbs showed a bilateral proximal DVT extending from the common femoral veins to the leg veins.

The Transthoracic cardiac ultrasound showed dilatation of the right chambers, with a paradoxical septum and systolic dysfunction of the right ventricle (TAPSE = 12 mm). She also had pre-capillary pulmonary hypertension with a systolic pulmonary pressure of 53 mmHg, and a mobile thrombus in the right atrium (**Figure 3**).

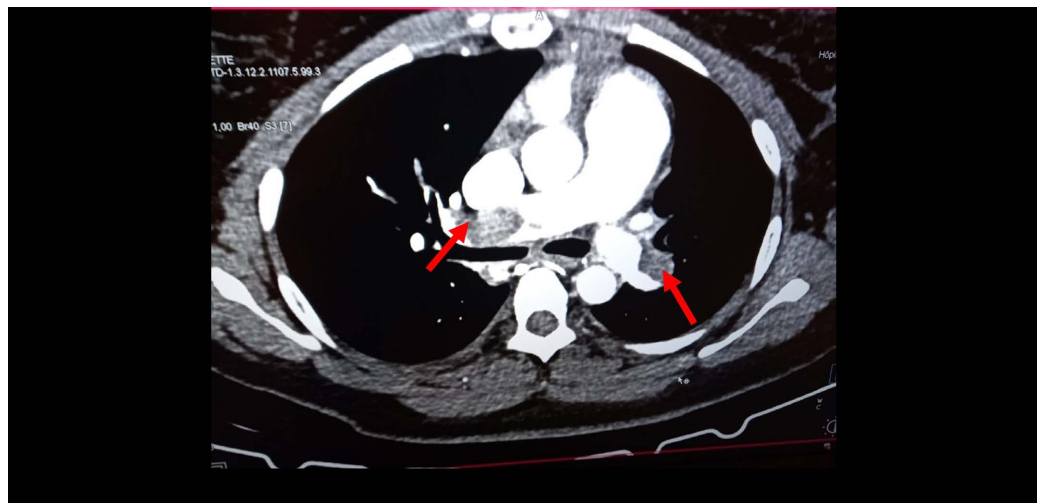


Figure 2. Proximal bilateral pulmonary embolism (Arrows).

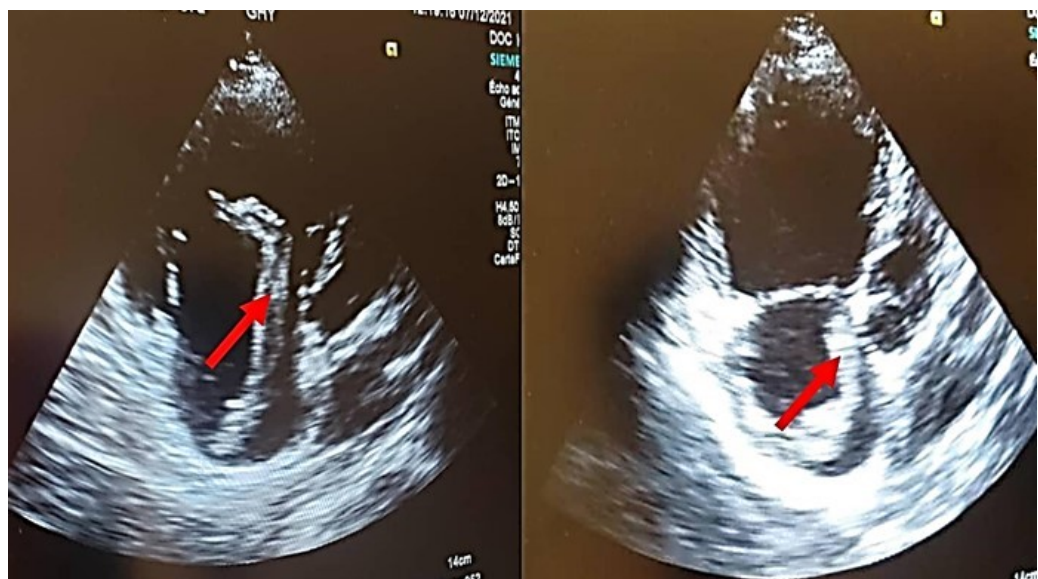


Figure 3. Cardiac ultrasound, apical section 04 cavities mobile: serpentine thrombus in the right atrium (Arrows).

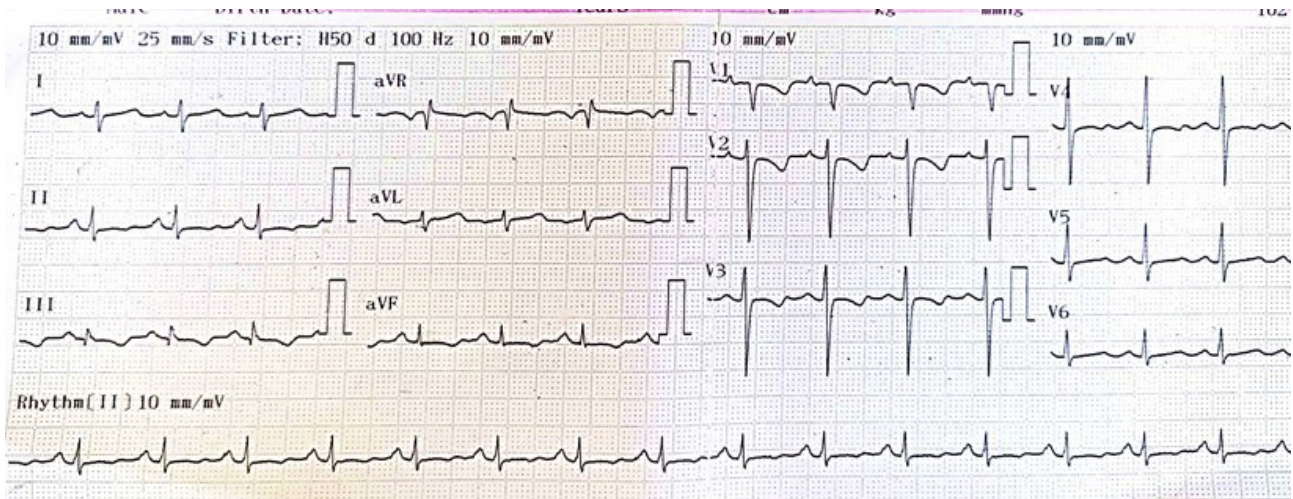


Figure 4. Regular sinus tachycardia at 101 bpm, S1Q3T3 aspect, Inversion of the T wave from V1 to V2.

The ECG showed signs of acute pulmonary heart disease (**Figure 4**), and the troponins were normal, which allowed us to classify this pulmonary embolism as low intermediate risk (SPESI score 2). As part of the investigation of the aetiology, a coagulation test for thrombophilia could not be performed by the patient. The gynaeco-obstetrical examination was unremarkable, and a thoracic-abdominopelvic CT scan was normal. The management instituted resuscitation measures associated with curative doses of anticoagulant (Initially with enoxaparin for 72 hours and then rivaroxaban in absence of neurological deterioration) after informed consent of the patient and a multidisciplinary consultation meeting. Clinical monitoring consisted mainly of checking for the appearance of new neurological signs or worsening of the pre-existing deficit that may imply the extension of the cerebral haemorrhage. The evolution after days 3 weeks of curative anticoagulant treatment was marked by an improvement in the general state, normalization of the vital signs, and regression of the signs of respiratory distress. The brain CT-Scan showed stability of the hematoma.

3. Discussion

VTED remains a major cause of morbidity and mortality in our context. Its prevention is capital, especially in a high-risk setting like hospitalization for major surgery and medical conditions including heart failure, myocardial infarction, or stroke. This prevention includes parenteral heparin prophylaxis and lower limb compression stockings. In the case of our patient, she had compression stockings to prevent VTE during her previous hospitalization for the management of hemorrhage stroke. However, the CLOTS-1 study suggested that compression stockings compared to routine care do not significantly prevent VTE [6]. Similarly, another study showed a higher incidence of proximal DVT when the compression stockings are below the knee [7]. Another clinical trial has demonstrated the superiority of intermittent pneumatic compression over compression stockings for the prevention of VTE and the European Stroke Organisation

guidelines recommend its use [8] [9]. However, access to pneumatic compression is very difficult in our context. A study realized by Orken *et al.* in 2009 showed that the introduction of LMWH-based chemoprophylaxis in patients having hemorrhage stroke was not related to an increase in the hematoma volume [10]. Given that our patient was at high risk of VTE according to the CAPRINI score, LMWH prophylaxis combined with compression stockings would have been a good option for the prevention. Several studies carried out in our context have shown shortcomings in thromboprophylaxis with LMWH in patients having hemorrhage stroke which may be explained by the medical team's fear of increased cerebral bleeding. [2] [11] [12]. In the case of a recent cerebral hemorrhage that contraindicates the initiation of anticoagulant treatment, the therapeutic modality is vena cava filter or surgical thrombo-embolectomy, treatments that are not always available in our context [13]. We then opted for anticoagulant treatment with close neurological evaluation rather than expectation to avoid clot extension and evolution to hemodynamic instability. Unconventional therapeutic strategies are often used in the treatment of thromboembolic disease depending on the context. This was the case in a 60-year-old female patient who had a haemorrhagic stroke complicated by pulmonary embolism with haemodynamic instability and cardiac arrest. Despite the absolute contraindication, thrombolysis was performed because thrombo-embolectomy was not available, and the patient's life was saved [14]. In our case, for the choice of anticoagulant, we initially started with enoxaparin for 72 hours and then the oral relay was done with rivaroxaban. Direct oral anticoagulants (DOA), were preferred to vitamin k antagonists for the oral relay because they cause fewer hemorrhagic complications [15]. The DOA of choice would have been apixaban which causes fewer hemorrhagic complications compared to rivaroxaban but it is not available in our setting [16]. Because of the absence of large randomized clinical trials on the subject, associated with a lack of formal recommendations, the decision on anticoagulation is made on a case-by-case basis [8].

4. Conclusion

Thromboembolic events occurring in the context of hemorrhagic stroke are a big challenge, especially in a resource-limited setting where a venous filter or surgical thromboembolisation is not available. Because of the paucity of large clinical trials with high levels of evidence to guide the use of anticoagulants in haemorrhagic stroke, the decision must be made on a case-by-case basis, after informed consent and multidisciplinary consultation meeting.

Authors' Contribution

Manuscript drafting: Liliane Mfeukeu-Kuate, Andy Tchouanlong Tabugua, Honoré Kemnang Yemele, Ahmadou Musa Jingi.

Manuscript revision: Liliane Mfeukeu-Kuate, Andy Tchouanlong Tabugua, Honoré Kemnang Yemele, Nadège Nganou-Gnindjio, Boris Kom Wandji,

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Approval of the final manuscript: All the authors.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Abbreviations

VTE: Venous thromboembolism

DVT: deep vein thrombosis

PE: pulmonary embolism

DOA: Direct oral anticoagulants,

LMWH: Low molecular weight heparin