Open Journal of Clinical Case Reports

Case Report

Primary Venous Thromboembolism (VTE) Prophylaxis in Elderly Patients

Gariba Mesharck[1], Claudia Sam[1], Anjali Babu[1], Xheme Ilazi[2], Archie Nteteka[1] and Lawrence Emmanuel[3]*

[1]*Bedford hospital NHS Trust, UK*

[2]*Calderdale and Huddersfield NHS Foundation Trust, UK*

[3]*Bexley Medical Group, UK*

Abstract

Preventing Venous Thromboembolism (VTE) is important in hospitalised patient. The elderly patients (Over 65 years) are at high risk of VTE due to the high prevalence of pre-existing medical conditions, reduce mobility, and acute illness during hospital admission. Management of the patient in this case report was a multidisciplinary team effort involving a medical consultant, junior doctors, and physician associates. In this article, we present a case report on the importance of primary VTE prophylaxis as a more cost-effective and safer method for elderly patients than screening for VTE.

Keywords: Venous thromboembolism; Elderly patient; Deep vein thrombosis; Pulmonary embolism; Prevention

Case Presentation

A 91-year-old lady was admitted to the emergency department following an unwitnessed fall in her kitchen. She was found by her daughter who phoned the paramedics. She has a past medical history of dementia, recurrent chest infection, hypertension, and depression. She was on amitriptyline, ramipril, donepezil, but allergic to penicillin. She was hemodynamically unstable; with temperature of 39.2°C (pyretic), heart rate of 110 (tachycardic), respiratory rate of 22 (tachypenic), hypotensive (95/60 mmHg), and a saturation of 90% (hypoxic) on room air, hence, the patient required about 2 L of oxygen to maintain a normal saturation of 92% to 96% during transport to the hospital by the ambulance. The patient's daughter reported that the patient, for the last 2 days, had been generally unwell and had decreased oral intake as she complained of swallowing difficulties. The patient was conscious and alert but found it difficult to communicate as she appeared to be short of breath. She also presented with bilateral pitting limb oedema with mild tenderness around the calves.

Diagnosis

An immediate blood investigation indicated a raised C-Reactive Protein (CRP) of 202 mg/L, and white cell count of 16×10^9/L, and an elevated neutrophil count, lactate, and creatinine levels. Chest x-ray showed right-sided haziness, but a normal x-ray of the pelvis. CT head requested was normal, and the patient underwent CT Pulmonary Angiogram (PA) and US Doppler of both legs to establish the cause of her Shortness of Breath (SOB) and bilateral calf tenderness respectively. CTPA showed a significant bilateral pulmonary embolism (Adopted Figure 1) [1], and US Doppler revealed right leg Deep Vein Thrombosis (DVT) in the femoral artery.

The patient underwent echocardiography to permit a comprehensive assessment of her cardiac structure and function to rule in/out any cardiac illness causing the SOB. Her echocardiography findings reported a raised pulmonary artery systolic pressure and ventricular dysfunction with a visible thrombus in the pulmonary arteries. Based on the results of the diagnostic investigations, the impression for this patient includes aspiration pneumonia, Pulmonary Embolism (PE), and DVT.

Immediate treatment

The patient was given intravenous Levofloxacin, and as per the hospital's Venous Thromboembolism (VTE) protocol she was already started on a prophylactic dose of tinzaparin on admission, which was immediately switched to a treatment dose of tinzaparin following the CTPA and US Doppler results. Additional symptomatic management including IV 0.9 % normal saline; 2L oxygen nasal cannula with a target saturation of above 94%, catheterisation, and regular vital sign monitoring was continued. Patient's poor oral intake, the oxygen requirement, hematuria (blood in urine) noted in the catheter collection bag and reduced mobility impacted her treatment and so it was decided that patient had poor prognosis. The patient was moved to an acute assessment unit, and then to a geriatric ward. The patient

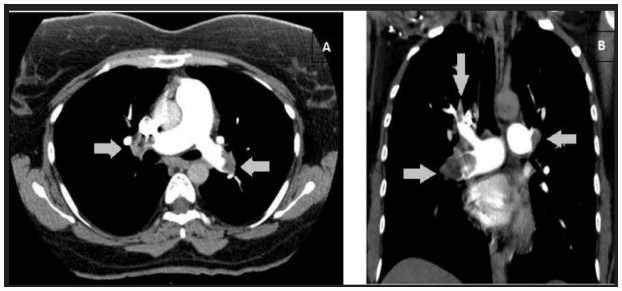

Figure 1: CT Pulmonary Angiogram (CTPA) revealing a bilateral pulmonary embolism in pulmonary arteries (as indicated with the arrows) (Adopted Image [1]).

Citation: Mesharck G, Sam C, Babu A, Ilazi X, Nteteka A, Emmanuel L. Primary Venous Thromboembolism (VTE) Prophylaxis in Elderly Patients. Open J Clin Case Rep. 2023;1(1):1003.

Publisher Name: Medtext Publications LLC

Manuscript compiled: Oct 05th, 2023

***Corresponding author:** Gariba Mesharck, Bedford hospital NHS Trust, UK

was also reviewed by the speech and language therapists and dietitians due to her swallowing problem and decreased oral intake.

Case progression and outcome

This patient's inflammatory marker level (CRP) began to improve after 4 days of IV levofloxacin, which was then switched to oral levofloxacin. Unfortunately, the hematuria continued, and so her haemoglobin levels were monitored closely. The patient's DVT and significant PE diagnosis meant anticoagulation should be continued but with a close monitoring of her hematuria and vital signs. The patient's family was aware of her severe frailty and understood her poor prognosis. Her family requested a discharge home with oxygen and a care package as per the patient's wish. Two weeks after discharge, she was re-admitted to the hospital with severe sepsis and continues decreasing oral intake, causing her death.

Discussion

Venous Thromboembolism (VTE) is one of the most common clinical issues among hospitalised patients [2]. Elderly patients are at a higher risk of VTE during hospitalisation [3], which increases the risk of PE [4]. The clinical silence of VTE, and the high risk of possible mortality of PE, emphasizes that prevention is the most effective tool for this medical condition. Primary VTE prophylaxis, with the use of effective and safe patient intervention, is considered the best approach to VTE management in elderly patients. The National Institute for Health and Care Excellence (NICE) recommends a Two-level DVT Wells score (Figure 2), and a pulmonary embolism rule-out criteria/ Two-level PE Wells score (Figure 3) for a suspected DVT and PE respectively [5].

The NICE guideline recommendations on anticoagulation treatment for suspected or confirmed DVT or PE include administering of anticoagulation therapy. The guidelines offer advice to administer anticoagulation for at least 3 months to people with confirmed proximal DVT or PE, and in cases where there is no baseline blood test, the guidelines recommends when to start anticoagulation treatment. However, the most important aspect is the prevention of VTE in patients, especially in the elderly, rather than treatment. Primary VTE prophylaxis is essential in geriatric medicine, because of elderly patient frailty, pre-existing co-morbidities, and reduced mobility during hospitalisation. The prevention of VTE in elderly patients in long-care facilities is an important public health issue [6]. For this patient, VTE prophylaxis aided the management of her DVT, and PE more quickly and more effectively.

2-level DVT Wells score

Clinical feature	Points
Active cancer (treatment ongoing, within 6 months, or palliative)	1
Paralysis, paresis or recent plaster immobilisation of lower extremities	1
Recently bedridden for 3 days or more, or major surgery within 12 weeks requiring general or regional anaesthesia	1
Localised tenderness along the distribution of the deep venous system	1
Entire leg swollen	1
Calf swelling at least 3 cm larger than asymptomatic side	1
Pitting oedema confined to the symptomatic leg	1
Collateral superficial veins (non-varicose)	1
Previously documented DVT	1
An alternative diagnosis is at least as likely as DVT	-2
DVT likely: 2 points or more DVT unlikely: 1 point or less	

Figure 2: Two-levels DVT well score for suspected DVT [5].

2-level PE Wells score

Clinical feature	Points
Clinical signs and symptoms of DVT (minimum of leg swelling and pain with palpation of the deep veins)	3
An alternative diagnosis is less likely than PE	3
Heart rate more than 100 beats per minute	1.5
Immobilisation for more than 3 days or surgery in previous 4 weeks	1.5
Previous DVT/PE	1.5
Haemoptysis	1
Malignancy (on treatment, treated in the last 6 months, or palliative)	1
PE likely: More than 4 points PE unlikely: 4 points or less	

Figure 3: Two-levels PE Wells score for suspected PE [5].

Conclusion

This patient presented with an unwitnessed fall and acute illness on admission. Clinicians should be aware of the importance of VTE prophylactic protocol for patients on initial assessment in secondary care, especially in the elderly patient because of the pre-existing co-morbidities and acute illness. VTE prophylaxis lowers the incidence of morbidity and mortality, hence improving health-related quality of life [7].

References

1. Upadhyay H, Sherani K, Vakil A, Babury M. A case of recurrent massive pulmonary embolism in Klippel-Trenaunay-Weber syndrome treated with thrombolytics. Respir Med Case Rep. 2016;17:68-70.
2. Bosson J, Labarere J, Sevestre MA, Belmin J, Beyssier L, Elias A, et al. Deep Vein Thrombosis in Elderly Patients Hospitalized in Subacute Care Facilities: A Multicenter Cross-sectional Study of Risk Factors, Prophylaxis, and Prevalence. Arch Intern Med. 2003;163(21):2613-8.
3. Li L, Zhen J, Huang L, Zhou J, Yao L, Xu L, et al. The risk factors for deep venous thrombosis in critically ill older adult patients: a subgroup analysis of a prospective, multicenter, observational study. BMC Geriatr. 2022;22(1):977(2022).
4. Badireddy M, Mudipalli VR. Deep Venous Thrombosis Prophylaxis. StatPearls. 2023.
5. National Institute for Health and Care Excellence. Venous thromboembolic diseases: diagnosis, management, and thrombophilia testing. 2020.
6. Haas S, Spyropoulos AC. Primary prevention of venous thromboembolism in long-term care: identifying and managing the risk. Clin Appl ThrombHemost. 2008;14(2):149-58.
7. Brüggemann RAG, Alnima T, Brouns SHA, Hanssen NMJ, Schols JMGA, Ten Cate H, et al. A known unknown? Pharmacological prevention of venous thromboembolism in nursing home residents. J Am Geriatr Soc. 2021;69(11):3338-43.