

Delirium Superimposed on Dementia, in an Elderly Female Patient with Venous Thrombosis of the Leg

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ABSTRACT

This is a challenging case of an elderly female patient, 86 years old that has been diagnosed with delirium superimposed on depression (DSD). This frustrated patient developed DSD in parallel with venous thrombosis (VT) of her right leg. Venous thrombosis was initially superficial, affecting the Great Saphenous Vein (GSV), that later progressed into Deep Venous Thrombosis (DVT), which was confirmed by radiology (Doppler study) and laboratory investigations (D-dimer level assessment).

The therapeutic approach for such patient, was literally a dilemma, and the situation was distressing to the patient, medical and paramedical staff, and the caregivers. The patient had stopped accepting food, and she had a refractory insomnia. Additionally, the patient became frequently hyperactive throughout the day in association with frequent delirium attacks. Her hyperactivity was difficult to control, despite her leg condition (DVT) that requires immobilization to prevent a superimposed catastrophic thromboembolic episode. Luckily, a pulmonary embolism did not happen.

The patient refused/resisted diagnostic and therapeutic interventions, and third party consultations. However, a multidisciplinary approach was mandatory, and the core issue was the DSD. Eventually, the DSD was eventually successfully corrected with an adjusted dose of Haloperidol, a high potency first generation antipsychotic. After few days on Haloperidol, the patient became cooperative with caregivers, acceptant to therapeutic interventions, and hospitalization. Her medical and surgical complications were successfully managed. Finally, the patient was scheduled later, for reconstructive surgery, using mesh skin grafting under regional anesthesia, to cure her subsequent refractory venous leg ulcer.

KEYWORDS

Delirium; Dementia; Delirium Superimposed on Dementia (DSD); Hyperactive; Venous Thrombosis; Ulcer; Elderly; LMWH, Haloperidol.

INTRODUCTION

Delirium is a common geriatric syndrome characterized by an acute and fluctuating disturbance of consciousness, inat-

tention and deficits in arousal and cognition. Delirium which occurs in demented individuals is known as delirium superimposed on dementia (DSD). The prevalence of DSD in the

community ranges from 22% to 89%. DSD is associated with serious adverse outcomes including an accelerated cognitive functions' decline, institutionalization, hospitalization and re-hospitalization, and mortality. DSD might be the sign of an undiagnosed infection or pharmacologically-related with a recent change of patient's drugs. The diagnosis of DSD is often challenging, because signs of delirium are usually fluctuating even during the same day that it might be confused with the underlying dementia, and the abnormal cognitive status. Cognitive functions in DSD can be assessed by: Confusion Assessment Method (CAM), CAM for the Intensive Care Unit (CAM-ICU), Cognitive Test for Delirium (CTD), Delirium Rating Scale (DRS), electroencephalography (EEG), and Short-Portable Mental Status Questionnaire (SPMSQ). In light of the current medical evidence, the CAM and the CAM-ICU represent the best to be used for assessing and confirming the diagnosis of DSD. However, Caregiver information is also vital, to ascertain whether there has been an acute decline of cognition (characteristic of delirium) or a much longer/chronic decline (characteristic of dementia) [1]. Wei et al. 2008, in his systematic review on the current usage of CAM, declared that CAM has an overall sensitivity of 94% and an overall specificity of 89% (95% confidence interval, was considered for both sensitivity and specificity). The CAM has been translated into ten languages. In application studies, CAM-rated delirium is most commonly used as a risk factor or outcome but also as an intervention or reference standard. The CAM has helped to improve identification of delirium in clinical and research settings. For optimum performance, the CAM should be scored during formal cognitive testing [2].

In this presented case, the diagnosis of the underlying in dementia and in DSD, was based on a conclusive diagnostic criterion by McKhann et al. 2011, at the National Institute on Aging-Alzheimer's Association workgroups, the diagnostic criteria intended to encompass the spectrum of severity, ranging from the mildest to the most severe stages of dementia [3]. This case is of DSD in an elderly female patient (86 years old), whom initially presented with superficial venous thrombosis (SVT) affecting the right lower limb, that later progressed into deep venous thrombosis (DVT). The patient was already diagnosed with dementia and delirium superimposed on dementia (DSD) that evolved during the course of her illness. Luckily the patient DVT, did not progress in to pulmonary embolism (PE). It's known that SVT which is closely linked to deep vein thrombosis (DVT) or pulmonary embolism (PE), which highlights the potential severity of this disease. DVT or PE is diagnosed in 20-30% of SVT [4].

Fick et al. 2002, in his systematic review on DSD, stated the

clinical and economic implications for early recognition and prevention of DSD are considerably high. Additionally, dementia is a well-documented risk factor for the development of delirium and often underdiagnosed, underrated and/or undertreated. It's very important to emphasize that preventing or decreasing the hospital stay by just one day, would result in significant savings of costs [5].

CASE REPORT

The patient is 86 years old female from Iraq. She is a non-diabetic. She is a chronic hypertensive patient for over 50 years, her blood pressure is well-controlled with anti-hypertensive medications, Lisoretic (Lisinopril & Hydrochlorothiazide) 10 mg/12.5 mg tablet once daily. She had chronic bilateral dependent leg edema for over 30 years, for which a graded compressive elastic hosiery was only used. In the past two years, the patient developed two previous episodes of superficial thrombophlebitis (SVT), affecting veins of both the left and the right legs respectively. Patient recovered successfully from both episodes, conservative therapeutic protocol was successful.

Approximately four months ago, on the 18th October, she developed a 3rd episode of SVT, affecting the veins of the right lower limb, specifically the right great saphenous vein (GSV). Initially, the inflammation affected the vein at a distance of four centimeters (cm) above the medial malleolus, for a segment of approximately six cm in length. Later, within two days, the inflammation spread to affect the vein and the overlying skin, starting from the level the medial malleolus to the level of medial condyle of tibia. Patient was systemically well, vitally stable, afebrile, and together with blood investigations, cellulitis was excluded. However, the patient was unable to walk normally due to pain. The overlying skin was red, tender, with a tender cord-like vein on palpation. The patient was referred to a vascular surgery clinic, and the diagnosis chronic venous insufficiency leading to SVT, affecting the GSV, was confirmed. Management was initiated immediately, with Lincomycin intramuscular injections, Hirudoid (Heparinoid) gel applied twice a day, Daflon 500 mg tablet once daily, 50-100 mg Celecoxib tablet twice a day, and warm baths for the affected leg.

Within few days of initiating the treatment, the patient showed dramatic improvement, and the visible/palpable inflammation regressed completely. However, the edema of the right leg persisted, with a residual hard area located about four cm above the level of the medial malleolus, the area was mildly tender, but with normal skin coloration. Patient was encouraged to stay mobile, and to apply daily warm baths to the affected leg, continued for symptomatic relief of some infre-

quent pain episodes. Reparil gel, applied twice daily, was later added. However, no significant improvement was noted for both the edema and the hardened area. Later, the hardened area evolved a centrally-located pinpoint brown-black dyspigmentation, approximately two mm in diameter. A Doppler study of both lower limbs was immediately done, with laboratory investigations including D-dimer level assessment. Renée et al. 2011, proposed the age-adjusted D-dimer cut-off value, which is calculated by multiplying the patient's age by 10 in patients older than 50 years. This cut-off value of D-dimer level, increases the number of older patients in whom deep vein thrombosis can be safely excluded [6]. Unfortunately, this particular elderly patient was not excluded from DVT risk, her D-dimer level was 876.27 ng/ml, while the cut-off value for this patient should be 860 ng/ml. Additionally, Doppler study, confirmed the presence of thrombosis affecting the perforating veins between the GSV and the deep veins of the lower limb. Collectively, based on patient's clinical features, Doppler studies, and level of D-dimer adjusted for age, a diagnosis of Deep Venous Thrombosis (DVT) of the right leg, was confirmed. Simultaneously, patient had serially elevated renal function tests (RFT), Urea levels were fluctuating in the range of 80s-100s mg/dl, and an elevated creatinine level up to 2.1 mg/dl, while serum electrolytes were completely normal. Moreover, patient developed features of an acute confusional status (Delirium), which manifested with frequent visual hallucinations, persistent delusions in which she kept insisting that some of her money was stolen, and falsification/confabulation of past events and memories of her life. Delirium was confirmed based on psychiatry consultation, and using Confusion Assessment Method (CAM) as a delirium diagnostic tool. Patient was already diagnosed with Dementia based on conclusive diagnostic criteria [3]. Psychiatric assessment, confirmed the diagnosis of the patient with Delirium superimposed on Dementia (DSD). The patient was treated with Gabapentin 300 mg oral tablet once daily. However, features of Delirium, kept fluctuating during the day, and exacerbated mainly at night, that caused severe insomnia, which were distressing to both the patient, medical staff, and the caregivers. Topical wound care, was also managed in parallel, and a co-existing cellulitis was excluded via Bacteriology studies. Topical wound care included using hydrogen peroxide, povidone Iodine, and topical Rifampicin, and an occlusive wound dressing.

Concerning the DVT management, the patient was immediately immobilized, to avoid a catastrophic Pulmonary Embolism (PE). Low molecular weight Heparin (LMWH), in the form of Enoxaparin subcutaneous injections (dose adjusted for age and weight), were administered for three successive days, followed by an adjusted dose of warfarin tablets for 6 weeks, and

Trental (Penotxifylline) 400 mg tablet twice daily, was also prescribed. Laboratory investigations of blood coagulation profile (PT, PTT, and INR), RFT, and serum electrolytes, were repeated on weekly basis. A 2nd Doppler study was repeated after four weeks from the onset of starting this management protocol. Luckily, the Doppler study, confirmed the complete resolution of DVT, and the absence of any arterial pathology. However, the patient eventually developed an expanding hard necrotic area above the medial malleolus, with evident characteristics of an evolving venous leg ulcer. The necrotic area continued to expand over the course of some weeks. Luciana et al., 2015, stated that venous leg ulcer is responsible for about 70% of chronic ulcers of the lower limbs, and recurrence is quite high, ranging from 54 to 78% [7]. Vascular surgery consultation, advised against surgical debridement of the necrotic tissue, due to patient age, elevated renal function test, and overall immune status. Therefore, a conservative treatment approach, was followed.

Right leg and foot edema, became gradually more evident, with an increasing level of discomfort, and pain, despite normal Doppler studies. Patient's urine output was gradually less, and eventually developed oliguria, with a persistently elevated RFT, and low borderline serum potassium level. Accordingly, the patient was hospitalized, on the 3rd of March. Leg wound biopsy was taken, it confirmed bacterial colonization. The patient was treated with intravenous Ceftazidime 2 gm 3 times a day, intravenous Vancomycin 1 gm twice a day, and potassium sparing diuretics. Orthopedic consultation and radiological study (X-ray) for both legs, excluded the presence of osteomyelitis. Patient also undergo CT scan of the head, which revealed no evident structural abnormalities of the brain [8]. Patient's hydration level was assessed and accordingly corrected with intravenous fluid replacement, while monitoring the urine output (UOP). Concerning the delirium episodes, they were frequent, interfering with sleep particularly at night. Food intake was also minimal, for which a nasogastric tube was considered but not practical, due to the hyperactive status of the patient during the delirium episodes. Total parenteral nutrition was discussed, but not possible due to patient's elevated renal parameters. Gabapentin was discontinued, and haloperidol 1.5 mg tablet once daily at night, was prescribed. Dallas et al. 2007, in his systematic review on the use of antipsychotics in the treatment of Delirium, found that the medications most frequently utilized are the typical antipsychotic haloperidol, various benzodiazepines, and, increasingly, the atypical antipsychotics [9]. The patient RFT was re-evaluated after 4 days, and it was normal. The leg edema regressed, and the delirium became less frequent, and patient was discharged home while still on haloperidol, and

topical wound care was re-instated with topical fusidic acid cream. Physiotherapy to the both lower limbs, was also advised. Later, patient's food intake became adequate, and the frequency of Delirium episodes were much less evident. The patient was maintained on haloperidol tablets 1.5 mg once daily at night. Autologous mesh skin grafting for the ulcer site was planned, under regional anesthesia (nerve block) under cover of LMWH. For refractory venous leg ulcers, meshed split-thickness skin grafts, are reported of a success rates up to 75%, long-term treatment with LMWH seems to have improved results and prevent ulcer recurrence [10].

DISCUSSION AND CONCLUSION

This case represents a challenging case from all perspectives that required a multidisciplinary team approach of a vascular surgeon, a dermatologist, an internal Medicine specialist, the paramedical staff, and the caregivers. The other challenge to both the physicians and the caregivers, was that the patient is an elderly demented patient, who developed DSD, in parallel with other medical complications including dehydration, insomnia, low renal perfusion and a decline in the RFT, and hyperactivity as a result of delirium. Moreover, surgical complications, including venous ulceration as a consequence of chronic venous insufficiency. The venous ulceration, was refractory to surgical intervention due to patient's advanced age, impaired renal status and overall low level of immunity. Patient's frequent delirium attacks, were also resistant to various antipsychotic medications, and centrally-acting agents including Alprazolam and Gabapentin. The uncontrolled DSD, left the patient in a very distressed and helpless state, beyond the capacity of the caregivers and the medical staff. Luckily, the patient responded to an adjusted dose of Haloperidol, a high-potency first generation antipsychotic. Once patient, DSD was under control, the patient resumed cooperating with caregivers, eating foods, and willingly accepting her medications, and cooperating with the medical and paramedical staff during her hospitalization. The patient's condition was finally stabilized and discharged from hospital, to be scheduled for surgical intervention, using an autologous mesh split-thickness skin grafting, under regional anesthesia, that best fit with her overall medical status.

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CONFLICTS OF INTEREST

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