Annals of Case Reports & Reviews

Case Report

doi: 10.39127/2574-5747/ACRR:1000132.
Fehdi MA, et al. Annal Cas Rep Rev: ACRR-132.

Multiple Venous Thrombosis in A COVID-19 Patient

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Citation: Fehdi MA, Erragh A, Zerhouni A, Hafiani Y, Aissaoui O (2020) Multiple Venous Thrombosis in A COVID-19 Patient. Annal Cas Rep Rev: ACRR-132.

Received Date: 07 June 2020; **Accepted Date:** 11 June 2020; **Published Date:** 18 June 2020

Abstract

COVID-19 is responsible for an actual worldwide pandemic. It has been recently incriminated in thrombotic events and coagulopathy in severe cases of COVID-19. The cytokine storm and the severe inflammatory response are the most plausible mecanisms. Upper limb venous thrombosis is not very frequent as a thrombotic complication. The authors report the case of multiple venous thrombosis in a COVID-19 patient, and its management.

Introduction

Coronavirus disease 2019 (Covid-19) caused a global pandemic within weeks, with more than hundreds of thousands of people infected. Almost 1/3 of Covid-19 patients have severe clotting abnormalities, which are present in more than 70% of severe cases. There is a high incidence of thrombotic events in patients admitted for Covid-19, which can be estimated at 15-30%, a figure which will be higher in ICU patients. These findings should be associated with proactive management in Covid-19 patients. Thus, a rigorous thrombotic risk assessment and the implementation of an appropriate anticoagulation strategy are required. The othors report a clinical case of multiple venous thrombosis in a COVID-19 patient.

Observation

A 70 years old female patient, Body Mass Index = 30, with history of diabetes and hypertension, presented to the emergency room with dry cough, dyspnea, and fever. Initial clinical assessment found a conscient patient, with a respiratory rate at 35/min, oxygen saturation at 90% without oxygen, hyperglycemia at 5g/L with no ketone, and fever at 39°C. She was hemodynamically stable. The initial management required insulin injections and saline perfusion, high concentration oxygen mask, half seated position. Due to the COVID-19 pandemic a rt-PCR for SARS-COV-2 was performed, which came back positive. The patient was then transferred to the COVID-19 dedicated ICU. As her respiratory state has worsened, the patient was intubated, and put under mechanical ventilation. A central venous line, a gastric tube and an urinary catheterism were performed. The initial protocol therapy contained, Hydroxychloroquine (200 mg x 3/day), Azithromycine (500 mg/day), Ceftriaxon (2 g/day), Moxifloxacin (400 mg x 2/day), continuous sedation, thromboprophylaxis with double dose of enoxaparin (100UI/kg x 2/day) following the Moroccan protocol of thromboprophylaxis. The biological assessment found a normal prothrombin time (PT) and partial thromboplastin time (PTT), a high fibrinogen level at 8,2 g/l, a high D-Dimer level at 1,6 mg/l, with an important biological inflammatory syndrome. The evolution was marked, 48 hours after onset of mechanical ventilation, by the appearance of pain redness and swelling in the right upper limb, located essentially in the arm, a sonography exam was performed, objectifying a venous thrombosis of the right internal jugular vein extended to the right axillary vein. We removed the jugular catheter and inserted a left internal jugular one, we indicated the uplifting of the right upper limb to help venous circulation. We maintained the same dose of enoxaparin, as it was a curative dose level. After 14 days of mechanical ventilation,the first extubation was performed, which was unsuccessful requiring reintubation on the third day. A surgical tracheostomy was then performed to facilitate ventilation weaning, with the placement of a left subclavian catheter replacing the left jugular one. The evolution was marked by the appearance of a tumefied, red and painful left arm, sonography findings were, a venous thrombosis in the left subclavian vein with extension in the left axillary vein. The venous catheter was then removed, and the double dose of enoxaparin was maintained. The outcome was favorable after 7 days of treatment, the sonography control was normal. The patient was transferred to an after-ICU rehabilitation center, after two negative rt-PCR of SARS-COV-2.

Discussion

COVID-19 is causing an actual pandemic. Recently it has been incriminated in a high incidence of thromboembolic complications in patients. Many researches tempted to decipher the pathophysiology of this COVID-19 related coagulopathy [1,2,3,4]. In fact, coagulopathy is a common abnormality in patients with COVID-19, it is characterized by coagulation activation and endothelial dysfunction [1,3]. The most frequent abnormalities are thrombocytopenia and high levels of D-Dimer, low PT and elevated PTT [1,3]. A recent study has shown that venous and arterial thromboembolic events occurred in 8% of hospitalized patients (cumulative rate 21.0%) and 50% of events were diagnosed within 24 h of hospital admission [3]. Our patients presented her first VTE 48h after mechanical ventilation. Facing this challenge in COVID-19 patients management, the Moroccan society of anesthesia, analgesia and intensive care (SMAAR), in collaboration with the Moroccan society of emergency medicine (SMMU), had elaborated a therapy protocol for thromboprophylaxis, putting severe patients, such as our patient, under curative dose of enoxaparin [2] [Annex 1]. A new retrospective study, in two French ICUs, studied the incidence of venous thromboembolic (VTE) incidents in severe anticoagulated patients via systematic VTE screening, showing the presence of 69% of VTE in anticoagulated COVID-19 patients. They suggested considering VTE screening and therapeutic anticoagulation in severe COVID-19 patients[4]. Our patient was symptomatic in both VTE incidents. The cause of these VTE is more likely the important inflammatory syndrome secondary to COVID-19. Indeed, an Italian cohort, objectified that patients with Covid-19 are not consistent with acute disseminated intravascular coagulation, rather they support hypercoagulability together with a severe inflammatory state [5]. We believe that our case report's interest is in the rareness and the number of localisation of the VTE (bilateral upper limb).

Conclusion

The venous thromboembolic complications in COVID-19 are not rare. Their incidence should encourage the development of sufficient therapy protocol to suitably manage the thromboprophylaxis in these patients.

Competing interests

The authors declare no competing interests.

Authors' contribution

All the authors contributed equally in drafting of the manuscript. All the authors read and agreed to the final manuscript.

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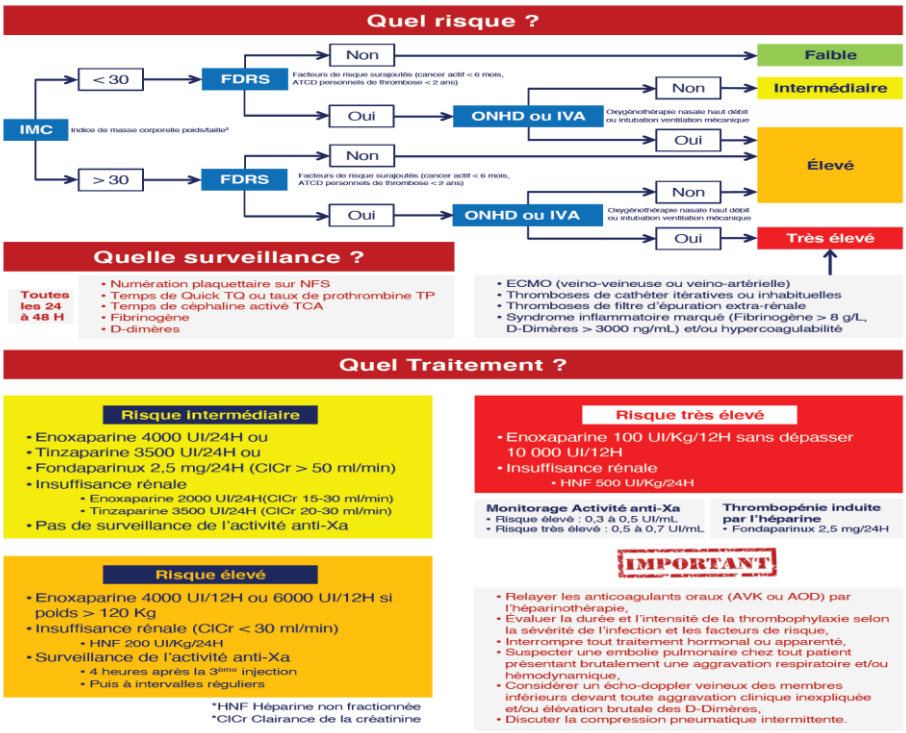
Annex

Annex 1: Anesthesiology and intensive care department of university hospital of Casablanca therapy protocol for thromboprophylaxis in COVID-19 patients.



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