ABSTRACT

Due to the respiratory infection of SARS-CoV-2, COVID-19 pandemic has now become a global threat. The thrombotic complications are common in COVID-19 patients which have been extensively addressed in various studies. The hemorrhagic complications, however, have received less attention. In this article, 4 cases of COVID-19 patients with hemorrhagic complications are presented.

All 4 patients were hospitalized in ICU and received routine COVID-19 treatments such as heparin prophylaxis. During hospitalization, all four patients had rectus sheath hematoma and retroperitoneal hemorrhage. For controlling which, they underwent embolization.

Embolization of the inferior epigastric artery and the anterior trunk of internal iliac artery was carried out under fluoroscopy-guided angiography. The active hemorrhage of the patients was controlled. Three patients recovered after the treatment and were discharged while one patient, unfortunately, died due to the severity of the pulmonary involvement, old age, and hemorrhage.

First, the hemorrhage of these patients was considered to be the result of the hemorrhagic complications due to the use of heparin. But the hemorrhage volume was not justifiable with the symptoms and complications of prophylaxis dosage of heparin. The attention was gradually drawn to the coagulopathy of the COVID-19 patients. Further investigations are required to clarify the role of effective factors and complications of coagulopathy in patients with COVID-19 and their appropriate treatment.

Keywords: Blood coagulation disorders, COVID-19, SARS-CoV-2, Radiology, Interventional

Introduction

Due to the respiratory infection of SARS-CoV-2, COVID-19 pandemic has now become a global threat (1-4). Numerous papers have addressed the pulmonary symptoms of this disease which highly contributed to the identification of the pathogenesis of COVID-19 infection. It seems that ACE2 receptors are involved in the entrance of the virus into the cells. Regarding the presence of these receptors on the surface of the alveoli epithelial cells and vascular endothelium, these cells and organs are prone to this
The incidence of thrombotic complications such as Pulmonary Thromboembolism, deep vein thrombosis, ischemic stroke, cardiac infarction, and arterial embolism is high in COVID-19 patients which has been reported in numerous studies before (6, 7). The initial clinical sign of coagulopathy in COVID-19 is organ failure while hemorrhagic complications are less common. The changes in the hemostatic markers such as D-dimer and fibrin and fibrinogen products have indicated that the basis of the coagulopathy is probably the fibrin products (8). However, the hemorrhagic complications of COVID-19 patients have received less attention. In this context, the current study presents four COVID-19 patients with hemorrhagic complications and describes their treatments.

Case Presentation

This paper investigates four COVID-19 patients with hemorrhagic complications (female; with a mean age of 48). All four patients had positive PCR tests for COVID-19 and exhibited bilateral pulmonary involvement with typical COVID-19 pattern (CORADS=6).

These patients were admitted in the ICU and received routine COVID-19 treatments. None of them received mechanical ventilation or intubation and they were treated under the guideline of the hospital in the ICU. Regarding the risk of thrombotic events, all four patients received a prophylactic dose of heparin.

During hospitalization, all four cases had rectus sheath hematoma and retroperitoneal hemorrhage. The first patient was about to recover and changed from CBR (Complete Bed Rest) to RBR (Relative Bed Rest) condition. Following the physical activities, the patient fell and fainted. Regarding the declined consciousness and faint, she was investigated. She had abdominal and pelvic ultrasonography due to the bruising in the anterior parts of the abdomen. Further investigations showed rectus sheath hematoma and accumulation of loculated fluid in the retroperitoneum (Figure 1). In these patients, due to hemorrhage in the rectus sheath and retroperitoneum, surgical treatment was not the choice and endovascular treatment was selected. Therefore, to control the hemorrhage, the patients underwent a less invasive intervention (arterial embolization) according to the volume of the hemorrhage and their conditions. Subsequently, three other patients with the same symptoms but in CBR status, experienced symptoms of volume reduction and shock. Further investigations indicated declined hemoglobin followed by hemorrhage in the rectus sheath and retroperitoneum who also received arterial embolization.

Inferior epigastric artery and anterior trunk of internal iliac artery embolization was performed under fluoroscopic and angiographic guidance (Figure 2 and 3). Active bleeding of patients was controlled. Three patients were discharged from the hospital after completing the appropriate course of treatment. One patient, unfortunately, died due to the severity of pulmonary involvement caused by COVID-19 due to her advanced age and volume of hemorrhage.
Discussion

Coagulation-anticoagulant imbalance during the immune response to the virus leads to overproduction of inflammatory cytokines and multi-organ failure. Initially, since all four patients were treated with a prophylactic dose of heparin, their hemorrhage was attributed to heparin-induced hemorrhagic complications. Due to falling of the first patient, it was also suggested as a cause of hemorrhage in the patient. However, the volume of bleeding and the symptoms caused by volume loss was not justifiable with the side effects of the prophylactic dose of heparin in the literature review (9, 10). The other three patients also had a hemorrhage in the CBR state, which also further declined the chance of falling as the underlying cause of
hemorrhage. Gradually attention was paid to the incidence of coagulopathy in COVID-19 patients. The occurrence of these symptoms and hemorrhage in patients can be justified in the setting of coagulopathy in COVID-19 patients. The retrograde evaluation of the first patient indicated a gradual decrease in hemoglobin level, which also suggests that the patient's falling could also be due to the decrease in hemoglobin level. Although venous thromboembolism and arterial thrombosis are more common in COVID-19 coagulopathy, in some cases, the clinical symptoms overlap with hemophagocytic syndromes, antiphospholipid, and thrombotic microangiopathies (11). The use of heparin prophylaxis is still controversial in COVID-19 patients. Cerebral hemorrhage has also been reported in COVID-19 patients, some of which have been secondary to prophylactic use of heparin. Several guidelines have been developed and employed for the treatment and management of coagulopathy and thrombotic complications in COVID-19 patients (12). Numerous studies have addressed the mechanism and pathogenesis of thrombotic and hemorrhagic complications of COVID-19; however, further investigations are required to clarify the role of effective factors and complications of coagulopathy in patients with COVID-19 and their appropriate treatment (12, 13). It may also be possible to prevent hemorrhagic and thrombotic complications in patients by evaluating coagulation tests during hospitalization and before discharge, which also requires further investigations.

Conclusion

There is increasing awareness of coagulation disorders in Covid-19 infection. Thrombotic complications seem to be common among this patient population, which may necessitate preparing appropriate guidelines for its management. However hemorrhagic complications and their proper treatment should also be taken into consideration in covid-19 infection.

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Conflict of Interest

Authors declared no conflict of interests.

Ethical Statement

All ethical standards are met in this study.

Patient’s Consent

A written consent was obtained from the patient.
کووایل‌شناسی در بیماران مبتلا به کووید-۱۹ در دانشگاه علوم پزشکی ایران

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مقدمه

شاید هستند. تغییرات مکرر‌های هوموستاتیک در بررسی‌های آزمایش‌گاهی همچنین دی‌ای‌بر و محتوای فیبروز و فیبریت‌های ناشی می‌دهد که اساس کووایل‌شناسی است که محصولات اکسپرسیونی نتیجه این کار نشده است (8). در این میان کمتر بوده که عوارض همواری‌کننده بیماران مبتلا به کووید-۱۹ ۱۹ هنوز کافی نبوده است. بنابراین این مقاله به ارائه ۴ مورد بیمار مبتلا به کووید-۱۹ با عوارض همواری‌کننده در انجام شده است.

گزارش موارد

در این مقاله به ارائه ۴ بیمار مبتلا به کووید-۱۹ (۲۰۱۹) بیمار مبتلا به کووید-۱۹ مشاهده شده است. در سه بیماری از موارد به توسعه توده و خونریزی خارجی و مرگ اوج افتاده و در بیمار دیگری دچار آنفالیسم شد.

SARS-CoV-2

مراجع

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کووید 19 و در گرگیری ریوی دوطرفه با نمای تبیب کووید 19 را داشتند (CORADS=6).

این بیماران در بخش مراقبت های ویژه بستری و در حال دریافت درمان های روتین کووید 19 بودند. هنگ یک از بیماران تحت ونیلاسیون مکانیکی و با انتوه نیوبند و با توجه به کرایریا و گابینتانی بیمارستان در بخش مراقبت های ویژه تحت درمان قرار داشتند. با توجه به ریسک بروز عوارض ترمبوویک و با توجه به گابینتانی های ارائه شده هر چهار بیمار تحت درمان با هیپوکریا دوز بروفلانکس قرار داشتند.

در سپر بستری هر ۴ بیمار دچار همایون شیب رتکوس و خونریزی رتکوس ونیبادیدهانی بیمار در سپر بستری علاوه بر RBR در حال بهبود علائم بود. از وضعیت CBR تغییر فعالیت و سپس در CBR به طور معمول رتکوس و رتکوس ونیبادیدهانی بیمار در حال بهبود علائم داده بود. به دنبال آغاز فعالیت فیزیکی بیمار دچار یک نوبت گردید. سه بیمار پس از تکمیل سپر درمان مناسب از بیمارستان ترخیص شدند. یک بیمار با توجه به شدت درگیری ریوی ناشی از کووید ۱۹ با نمای تبیب به سین بالا و حجم خونریزی مناسفانه فوت شد.

شکل ۱. همایون و سیع شیب رتکوس در سی ان با تزریق شکم و گنگ

آمبولیپازیسون شریان ابی گاسترتیک تحتانی و هنگ یک از بیماران تحت هدایت فلوروسکوئی و انزیوگرافی جهت بیماران انجام شد (شکل های ۲ و ۳۰ خونریزی علاوه بر بیماران کنترل

گرایش بیمار تحت آمبولیپازیسون شریانی به عنوان اقدام کمرنگ‌ترین قرار گرفت. در ادامه به ترتیب سه بیمار دیگر با تایپ مشابه در وضعیت CBR دچار علائم کاهش حجم خونریزی و شکل شدند و در بررسی‌های تکمیلی افراد همگلوبین و تیپ خونریزی در شدت رتکوس و رتکوس ونیبادیدهانی بیماران با رای آنها نیز آمبولیپازیسون شریانی انجام شد.
شوری از دیگر عوامل احتمالی ارتباط دارد.

شکل ۲. آزمایشگر DSA

شکل ۳. آزمایشگر DSA

بحث

به هم خوردن تعادل انعقاد - ضدانعقاد در زمینه پاسخ ایمنی به ویروس منجر به تولید بیش از حد سیتوکین های اسهالی و آسیب مولتی ارگانی می‌گردد. در ابتدا این امر به اینکه ۴ بیمار تحت درمان با دوز پروفیلاکتیک هیبارین بودند، بروز حجم خونریزی در این بیماران به عواضی هموترازی ناشی از هیبارین نسبت داده شده. هنگامی که توجه به falling بیمار اول آن نیز به عنوان یک علت برای بروز هموترازی در بیمار مطرح گردید، اما حجم خونریزی رخ داده در بیماران و علائم ناشی از کاهش حجم
کووید ۱۹ و درمان مناسب آنها روشی ساده (۱۲، ۱۳). هم چنین شاید بتوان با ارزیابی نتایج انجام شده و پیش از ترخیص بیماران از بروز عوارض هموزیک و تروموبیک در این بیماران جلوگیری کرد که این مورد نیز نیاز به مطالعات بیشتری در این زمینه دارد.

نتیجه‌گیری

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گزارش نشده است.

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نادر.

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