Using Oral Anticoagulant During the Covid-19 Pandemic in Albania

Aida Dama

Department of Pharmacy, Albanian University, Tirana, Albania

Email: a.dama@albanianuniversity.edu.al

Abstract

The COVID-19 pandemic is a global health situation characterized by a highly infectious respiratory illness caused by the novel coronavirus SARS-CoV-2. From the first burst until nowadays, the virus had a significant impact on global public health and economies, leading to widespread lockdowns, disruptions to daily life, and a significant number of hospitalizations and deaths. Therapy for COVID-19 primarily involved supportive care, such as supplemental oxygen and hydration, to help alleviate symptoms and prevent complications. Antiviral medications, such as remdesivir, and corticosteroids, such as dexamethasone were also used. With the advancing of the disease, it was seen that the disease attacked the blood vessels and clot formation was a major deadly side effect of the virus. The usage of anticoagulants became priority as they could help in reducing of the risk of thrombosis and other complications associated with the virus. In this study we present a brief summary regarding increase in the usage of oral anticoagulants' usage among Albanian population in a time slot of four years. The new virus was strongly associated and characterized with clot manifestation in the COVID-19 positive patients. The use of anticoagulants in COVID-19 is important because the virus was associated with a higher risk of thrombotic events, including deep vein thrombosis (DVT), pulmonary embolism (PE), and stroke.

Keywords: COVID-19, vascular damage, clots, anticoagulants, treatment, therapy

Introduction

The COVID-19 pandemic is one of the greatest threats to human health in the 21st century with more than 257 million cases and over 5.17 million deaths reported worldwide. The new coronavirus (SARS-CoV-2) is responsible for a severe acute respiratory syndrome (1). The disease is characterized by a rapid onset of symptoms and can lead to severe respiratory distress, particularly in older adults and people with underlying health conditions such as cardiovascular disease, diabetes, and chronic respiratory disease. The virus has also been associated with a range of other

complications, including acute respiratory distress syndrome (ARDS), pneumonia, and organ failure. In addition to its impact on human health, the pandemic has had significant economic and social consequences, disrupting businesses and communities, and exacerbating existing inequalities and vulnerabilities (2).

Due to the created pandemic, worldwide public health authorities have implemented a range of measures, including travel restrictions, quarantine measures, and physical distancing, to slow the spread of the virus and reduce its impact on health systems. The development and distribution of vaccines has also been a key part of the response to the pandemic, and many countries have launched large-scale vaccination campaigns to protect the populations (2,3).

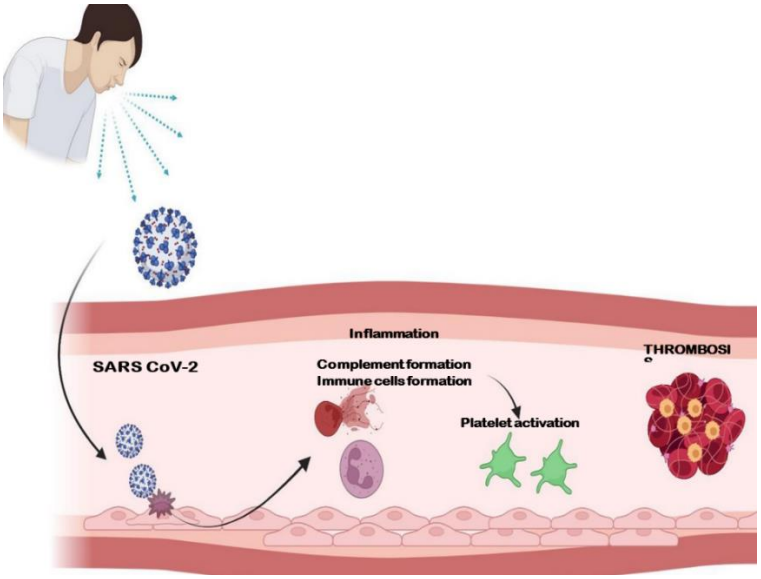

Figure 1.SARS CoV-2 enters human body, stimulates an excessive immune response and causes vasculature inflammation. Following this immune response, upregulation of tissue factors and platelets activation occur by causing thrombus formation.

Among its manifestations, it can develop a thrombotic disease, both venous and arterial, due to excessive inflammation that affects the vascular system, with platelet activation and endothelial dysfunction, among other mechanisms (4,5). Thrombosis is associated with SARS-CoV-2 infection, increasing its severity and conferring a worse prognosis. Possible mechanisms for thrombosis in COVID-19 and clinical consequences is the injury to the endothelium initiated by severe acute respiratory SARS-CoV-2 entry into cells via the angiotensin-converting enzyme 2 (ACE2) receptor is thought to lead to diffuse endotheliitis. The endothelial damage may result in an inflammatory host response characterized by excessive immune activation and cytokine storm, which promotes hypercoagulability and thrombosis.

This phenomenon led to the exploration of anticoagulants as a potential therapeutic option in the management of COVID-19 (5).

The incidence of thrombotic disease in individuals affected by COVID-19 is reported to be up to 31% (6). Given this increased risk of macrovascular and microvascular thrombosis in such patients with COVID-19, anticoagulants were suggested as an adjuvant option (7). Anticoagulants help prevent the formation of the clots and in the context of COVID-19, some studies suggested that they may play a role in the management of this disease. The SARS-CoV2 virus, which causes COVID-19, has been associated with an increased risk of blood clotting, particularly in the severe cases. Anticoagulants may have positive effects as they may recue the burden of thrombotic disease and the hyperactivity of coagulation, and may also hold beneficial direct anti-inflammatory effects against sepsis and the development of acute respiratory distress syndrome ARDS. The use of anticoagulants in this setting appeared to have caused a significant reduction in mortality from this disease (8).

Recent data in the literature show that in the cases of severe COVID-19 infection, a reduced mortality is reported due to anticoagulants, in patients with high D-dimer and/or exhibiting sepsis-induced coagulopathy (9).

Purpose of the study

This study provides an overview of regarding the quantitative difference on the use of some chosen oral anticoagulants, part of the reimbursement scheme in Albania, before and during the COVID-19 pandemic.

Materials and Methods

In the current study, we performed a retrospective analysis regarding the use of anticoagulants in Albanian population. Our goal was to investigate the increased use of these medications in reducing the risk of thrombotic events in COVID-19 patient population. The study consisted of data collection through public health institutions in Albania. The study on the use of anticoagulant drugs was according to data published on the official website of the Compulsory Health Insurance Fund in our country from 2018 to 2021(10).

Figure 2. Schematic view of the years for collecting the data

The studied anticoagulants were Rivaroxaban (10, 15, 20 mg), Acetylsalicylic Acid 100 mg, Clopidogrel 75mg, Apixaban (2.5 and 5 mg).

The data was analyzed using ATC/DDD methodology of the World Health Organization (WHO), version 2022, was used to calculate the use of the four

anticoagulant drugs according to the reimbursement scheme in Albania. The results are expressed as defined daily doses (DDD) per 1000 inhabitants per day. The data regarding the population is extracted from the official website of INSTAT (11). Our findings provide important insights into the increased need regarding the role and the importance of anticoagulants in the management of COVID-19 and may inform future clinical practice guidelines and research in this area.

Results

During 2018 - 2021 study period, all the studied drugs have experienced a significant increase in consumption. Acetylsalicylic acid is the drug with the highest consumption. Apixaban, the drug with the lowest consumption in 2021, was found to be the one with the highest consumption of all anticoagulants included in the study 9.14 DDD / 1000 inhabitants / day.

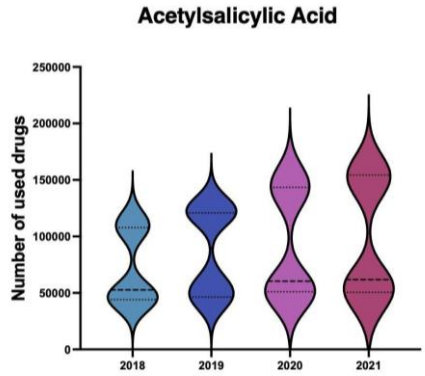

Figure 3. Acetylsalicylic acid consumption showed a time-point increase, although it didn't reach statistical significance.

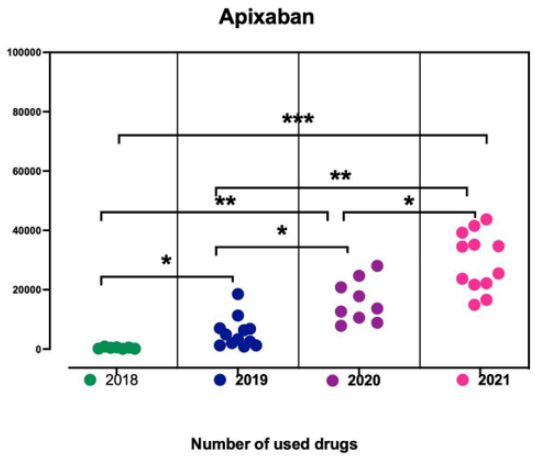

Figure 4. Apixaban experiences a sudden increase in the consumption by Albanian population during COVID-19 pandemic.

Rivaroxabane has seen an increase of about 70% in consumption during the study period. Clopidogrel and Acetylsalicylic Acid have seen an increase of about 40%.

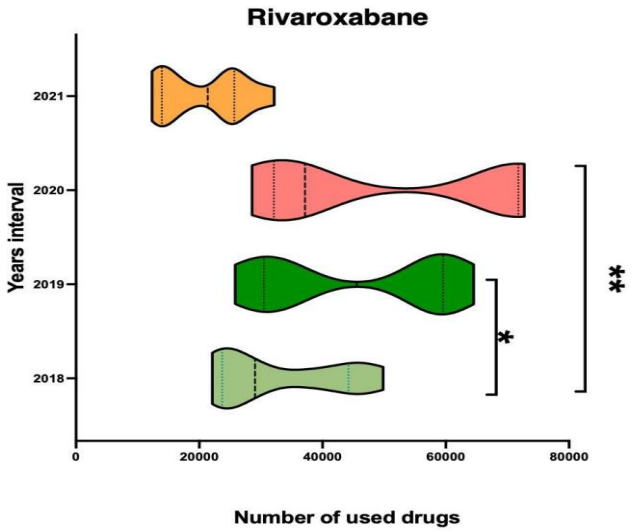

Figure 5. The consumption of Rivaroxabane experienced an increase of 70% and reached the statistical significance.

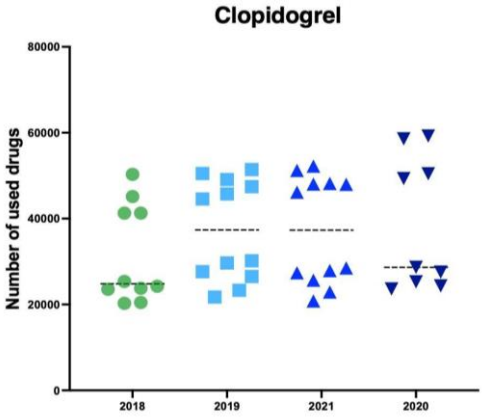

Figure 6. Clopidogrel experienced a slight increase which didn't reach the statistical significance

Conclusions

The use of anticoagulants, as a necessary and effective treatment method, has played an essential role in preventing and reducing mortality regarding the thrombotic disease, a concomitant pathology of COVID-

We see that the consumption of this class of drugs has increased during the pandemic period in Albania. The chosen method for assessment of consumption has a special importance because it allows us to compare consumption in other countries.

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