COVID-19 IN MY RA CLINIC: DATA FROM QUESTIONNAIRE, VACCINATION, INFECTION AND FLARES FROM THE RA LOUVAIN BRUSSELS COHORT

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**Background:** Over 5 million deaths from the COVID-19 disease have been reported in the world. Patients (pts) living with rheumatoid arthritis (RA) affecting the immune system or under immunosuppressive agent are considered as a high risk population for a SARS-CoV-2 infection. Since no antiviral treatment is available, the vaccination is a major option.

**Objectives:** The aim of this study is to evaluate in our RA cohort a questionnaire about the COVID-19 vaccination willingness, to analyse the vaccination rate, the number of COVID infection, the RA flares and the side effects.

**Methods:** We included pts with RA from the UCLouvain Brussels cohort who met the ACR/EULAR 2010 classification criteria. A simple and standard questionnaire about the vaccine willingness was distributed in 2020 before the vaccination. From January to December 21, the rate of vaccination was calculated. The number of Covid infections, RA flares, therapy switches and side effects were also collected. All patient and RA characteristics were analyzed.

**Results:** 605 eligible RA pts were included. The average age of the population is 58.21 years. 72% of the patients are women. 21% are smokers and 65% are positive for anti-citrullinated protein antibody (ACPA) with a mean DAS28-CRP of 2.39 and a mean HAQ of 0.821. In 2020, 460 pts filled the questionnaire and 61% indicated they would receive the vaccine as soon as it is available. For the 179 pts (39%) who decline, the reasons for not having vaccine were no trust in the vaccine at this time (33%), fear of side effects (28%), opposition to vaccine (4%), previous SARS-CoV-2 infection (2%) and unknown (5%). Pts under the age of 50, women, low education grade, smokers, presence of RF/ACPA and treatment with a bioDMARD were less willing to receive the vaccine. In 2021, 538 pts were vaccinated and only 67 pts (11.1%) not. The majority received a mRNA vaccine (81.8%). 72 and 21 pts developed a SARS-CoV-2 infection before and after the vaccination, respectively. Among them, 5 were admitted to intensive care unit leading to death. Only, 7 RA flares were observed and 17 pts switched the therapy. 101 adverse events were reported. All of them were mild and transient except 2 cases with pulmonary embolism and one case with Herpes Zoster infection.

**Conclusion:** The SARS-CoV-2 global pandemic is responsible of many medical dramas. In our RA cohort, we observed first hesitation followed by a high rate of vaccination. The safety was reassuring with a minimal number of RA flares and serious adverse events including only 4 deaths.

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THE LINK BETWEEN INFLAMMATION AND THROMBOSIS: CLINICAL AND IMMUNOHISTOCHEMICAL CHARACTERIZATION OF PULMONARY ARTERIAL THROMBOSIS IN COVID-19 PATIENTS

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**Background:** Coronavirus-19 disease (COVID-19) has been responsible, to date, for more than 5 million of deaths. Immuno thrombosis may be a major factor contributing to mortality in COVID-19 and pulmonary arterial tree involvement that mimics multiple pulmonary embolism could be a major contributor to disease course. Immunomodulatory drugs are of some benefit but mechanism not completely clear. We investigated pulmonary arterial tree clots to better appreciate their immunothrombotic nature, in contrast to the pathological characteristics of non-inflammatory thrombi (1).

**Objectives:** The primary objective was to study in depth the arterial thrombosis in COVID-19, by characterizing the immunohistochemical nature of thrombi, performing macroscopic and microscopic analyses, and by comparing clinical, laboratory and anatomopathological data of these patients with other patients died for COVID-19 but without evidence of pulmonary arterial thrombosis.

**Methods:** Autopsies were performed in patients (cases) who died for COVID-19 with evidence of pulmonary arterial thrombosis at autopsy finding but without pathological signs of bronchopneumonia or peripheral venous thrombosis. COVID-19 positive patients without pulmonary arterial thrombosis were selected as control group. Hematoxylin and eosin stained slides were reviewed choosing those with visible pulmonary thrombi. Further histochemical and immunohistochemical staining were performed in selected paraffin blocks. Each component of the thrombus was evaluated with the software application QuPath in terms of fibrin, red blood cells, platelets and immune cells percentage after scanning the slides with Aperio System. Laboratory tests were recorded at 2 points: at hospital admission and at Intensive Care Unit transfer.

**Results:** We included 13 patients (cases) and 14 controls, matched for age, gender and time from diagnosis to death. Twenty arterial thrombi were studied. By immunohistochemistry, arterial thrombi were composed by white blood cells (WBC) (median, IQR range: 10% (5-12.5), mainly neutrophils (58% (35.2-64.5)), red blood cells (12%, (6-34.25)), fibrin (19% (14.5-42.25)), platelets (39%, (31.75-48%)) (Figure 1).

Three cases had a history of previous thrombosis. All cases had received anticoagulant treatment during hospitalization, low molecular weight heparin in 12/13 (therapeutic regimen in 4/12, prophylactic in 8/12) while 1/13 continued oral anticoagulants for comorbidity. By comparing laboratory findings between cases and controls, cases showed significantly higher levels of platelet count [median, IQR range: 195000/mmc (157750-274500) vs 143500 (113000-175250), p=0.011], LDH (854 U/l (731-1315) vs 539 (391.5-660), p=0.003)] at hospital admission, and D-dimer at ICU transfer [25072 FEU (6951-50531) vs 1024 (620-5501), p=0.003].

**Figure 1.**

**Conclusion:** Pulmonary arterial thrombosis in COVID-19 is a type of immune-mediated inflammatory thrombosis, since the amount of WBC is 6-times more than normal value seen in non-inflammatory thrombi. Some markers of inflammation, necrosis and coagulation are much more increased in this subset of patients. Chest CT angiography rather than simple CT scan at hospital admission could be more useful in this setting, and treatments with antiplaete agents or anticoagulants, eventually in combination with immunotherapy, might positively affect the outcome.

**REFERENCES:**

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ATTITUDES AND HESITANCY IN PATIENTS WITH INFLAMMATORY RHEUMATIC DISEASES TOWARDS SARS-COV-2 VACCINATION: A SINGLE-CENTER STUDY FROM BULGARIA

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**Background:** Coronavirus disease 19 (COVID-19) is a global pandemic disease caused by a new type of coronavirus (SARS-CoV-2). The infection causes a viral pneumonia (COVID-19) associated with a strong inflammatory reaction and a high incidence of thrombosis. Patients with inflammatory rheumatic diseases, in particular those using anticoagulant treatment, are at high risk of infected with SARS-CoV-2 due to their immunosuppressive treatment. This study aimed to assess the attitudes and hesitancy in patients with inflammatory rheumatic diseases towards SARS-CoV-2 vaccination in a single-center study from Bulgaria.

**Methods:** A questionnaire was developed to assess the attitudes and hesitancy in patients with inflammatory rheumatic diseases towards SARS-CoV-2 vaccination. The questionnaire included questions about the knowledge of COVID-19, the willingness to receive the vaccine, the concerns about the vaccine, and the factors that influence the decision to receive the vaccine. The questionnaire was distributed to patients attending the Rheumatology outpatient clinic of the University Hospital - Varna, Bulgaria.

**Results:** A total of 614 patients with inflammatory rheumatic diseases were included in the study. The majority of patients (73%) were willing to receive the vaccine, while 27% of patients were hesitant. The most common concerns about the vaccine were the fear of side effects (42%), the belief that the vaccine is not effective (29%), and the fear of long-term complications (18%). The main factors that influence the decision to receive the vaccine were the confidence in the safety and efficacy of the vaccine (65%), the recommendation of the doctor (28%), and the knowledge about the vaccine (13%).

**Conclusion:** The attitudes and hesitancy in patients with inflammatory rheumatic diseases towards SARS-CoV-2 vaccination were assessed in a single-center study from Bulgaria. The majority of patients were willing to receive the vaccine, but the hesitancy was significant due to concerns about the vaccine. Further research is needed to address these concerns and increase vaccination rates in this population.