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Abstract: 2624

Scientific Abstracts > Emerging Technology

Risk of thromboembolic events as measured by endothelial function is not elevated in TKR patients with history of COVID disease

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Introduction

Endothelial injury as per Virchow's triad plays a major role in the formation of postoperative thrombosis. Previous studies demonstrated endothelial dysfunction in patients with thromboembolic events, and also in patients with active COVID infection. It is not known whether this predisposition to endothelial dysfunction (ED) persists upon resolution of active COVID infection implying possible need for higher level of thromboprophylaxis especially during the postoperative periods. Endothelial function (EF) can be measured non-invasively using a reactive hyperemia procedure such as offered by the VENDYS-II device. Since thromboembolic events also remain an issue following total knee replacement (TKR) surgery (2), this study aims to compare EF in SARS-CoV-2 IgG-positive vs SARS-CoV-2 IgG-negative TKR patients, in order to evaluate a possible need for more aggressive anticoagulation in TKR patients with history of COVID disease.

Materials and Methods

53 SARS-CoV-2 IgG-positive (case group) and 48 SARS-CoV-2 IgG-negative (control group) patients that received a primary TKR for knee osteoarthritis were consecutively recruited within a prospective matched cohort study. Patients were matched based on age, BMI and surgeon's volume. EF was assessed twice using the VENDYS-II device; once before surgery (DOS) and once on postoperative day 1 (POD 1). EF was quantified by the vascular reactivity index (VRI) numerically ranging between 0-3.5 (0=poor, 3.5=excellent). Data analysis was performed using t-test and a multivariable linear regression model was used to determine factors associated with postoperative VRI.

Results/Case Report

Case and control patients did not significantly differ in age, body mass index or co-morbidities (hypertension, diabetes mellitus, congestive heart failure, pulmonary disease, stroke, angina pectoris and malignant disease). (Table 1)
Mean baseline (POD 0) and postoperative VRI did not significantly differ between SARS-CoV-2-IgG-positive and SARS-CoV-2-IgG negative patients. In addition, when baseline values were compared to postoperative values in both study and control groups, there was no significant difference (Table 1)

Duration of COVID infection (p=0.44), time since COVID infection (p=0.59) and severity of COVID infection (p=0.17) did not correlate with postoperative VRI.

Discussion

This study demonstrates no significant difference in endothelial function between SARS-CoV-2 IgG-positive and SARS-CoV-2 IgG-negative patients either before or after TKR surgery and no association with severity and time since COVID infection. In view of the lack of difference in endothelial function, more aggressive DVT prophylaxis is not needed in TKR patients with history of COVID disease.

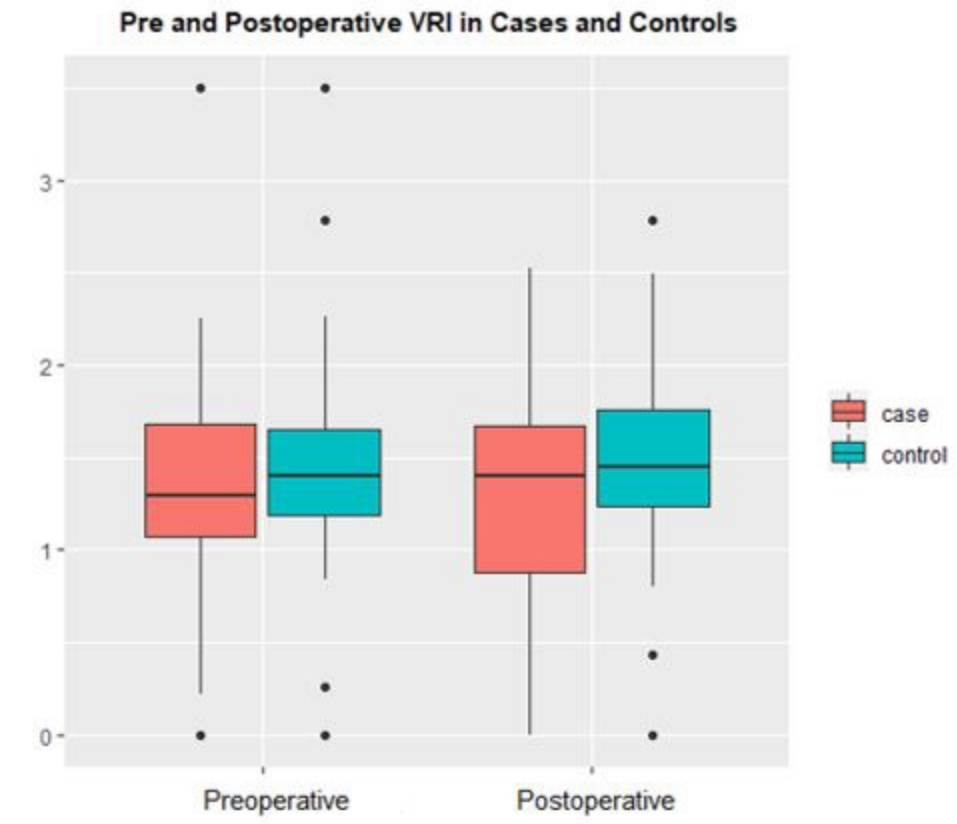
References

1. Mehta P, McAuley DF, Brown M, Sanchez E, Tattersall RS, Manson JJ. COVID-19: consider cytokine storm syndromes and immunosuppression. Lancet (London, England). 2020;395(10229):1033-4.
2. Santana DC, Emara AK, Orr MN, Klika AK, Higuera CA, Krebs VE, et al. An Update on Venous Thromboembolism Rates and Prophylaxis in Hip and Knee Arthroplasty in 2020. Medicina (Kaunas, Lithuania). 2020;56(9).

Disclosures

No

Tables / Images



	Cases	Control	p-value
n	53	48	
Age	63.5 ± 8.5	63.1 ± 7.3	0.81
BMI	32.1 ± 6.4	31.5 ± 5.9	0.59
Preoperative VRI (mean ± SD)	1.3 ± 0.6	1.5 ± 0.6	0.21
Postoperative VRI (mean ± SD)	1.3 ± 0.6	1.5 ± 0.5	0.07
Change in VRI (mean ± SD)	-0.05 ± 0.8	-0.01 ± 0.6	0.74

HOSPITAL FOR SPECIAL SURGERY

NOTIFICATION OF INITIAL APPROVAL

To: Friedrich Boettner, MD

From: Edward C. Jones, MD, MA
Rosemarie Gagliardi

Re: Study# 2020-1612
Does SARS-CoV-2 IgG positive increase the risk of thromboembolic disease?

2. This research involves only the collection of blood samples by finger stick, heel stick, ear stick, or venipuncture from healthy, non-pregnant adults or children where the amount of blood and frequency does not exceed federal regulations for normal clinical care.

3. This research involves prospective collection of biological specimens for research purposes by noninvasive means.
4. This research involves the collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves.
5. This research involves materials (data, documents, records, or specimens) that have been collected or will be collected solely for nonresearch purposes.
7. This research will be performed on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or will employ a survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Date: 9/10/2020

I am pleased to inform you that your Expedited Application was approved on 9/10/2020. This approval will expire on 9/9/2021. As the Principal Investigator of the study, you are responsible for fulfilling the following requirements of approval:

Please note: This study requires continuing review as the study involves patient interaction with informed consent being obtained.

1. A copy of the watermark dated forms must be used when obtaining written informed consent and authorization from research subjects and posting flyers/advertisements.

2. Please note that it is the responsibility of the principal investigator to send signed copies of the research consent form and research authorization form, with the subject's hospital identification number and other required information, to the Hospital's Medical Records Department for filing if the subject is an inpatient. If the subject is an outpatient, a copy of the signed consent form and research authorization form must be kept in the office chart.

3. Research investigators shall ensure that each person signing the research consent form receives a copy of the signed form.

4. The research investigators are advised to maintain a confidential listing of subjects in the research study, as well as the signed research consent form and research authorization form for their own records.

5. The research investigators are responsible for **immediately** reporting directly to the Chairman of the Institutional Review Board, any injuries or adverse events to human subjects participating in the research project, or any unanticipated problems which involve risk to the human subjects.

6. No Resident or Fellow can be listed as a Principal Investigator on any research protocols.

7.The Principal Investigators are responsible for notifying the IRB, in writing, of any changes to this original approved protocol, consent form, and any additions or deletions to the original list of investigators on the protocol. Changes in the above referenced research project cannot be initiated without prior IRB approval.

8. In the event that your research deals with existing pathological or diagnostic tissue specimens, you must comply with Medical Staff Rules and Regulations.

Thank you,

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