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Covid-19 Disease Is Not Associated with Venous Thromboembolism in a Cohort of Patients in Jeddah, Saudi Arabia

Fatemah Kamel, MBBS, PhD,^{*,1} Rania Magadmi, MBBS, PhD,^{*,1} Sulafa Alqutub, MBBS, PhD,^{*,2} Maha A. Badawi, MBBS, FRCPC,³ Fatin Al-Sayes, MBBS, FRCPI, FRCPath,^{*,3} Mazen Badawi, MBBS, FRCPC,^{*,4} Tariq Madani, MD FRCPC,^{*,4} Soheir Adam, MD FRCPath^{5,3}

¹Pharmacology Department, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

²Department of Family and Community Medicine, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

³Hematology Department, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

⁴Division of Infectious Diseases, Department of Medicine, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

⁵Duke University, Durham, NC

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Background: Coronavirus disease 2019 (COVID-19) caused by acute respiratory syndrome coronavirus 2 (SARS2), is associated with significant morbidity and mortality. The aim of this study is to characterize risk factors and clinical features of COVID-19 disease in an adult cohort in Jeddah, Saudi Arabia.

Methods: A retrospective case control study was conducted at King Abdulaziz University hospital (KAUH) in Jeddah, Saudi Arabia. Clinical and demographic data on patients presenting at KAUH with concern for COVID-19 disease between March 18 and May 18, 2020 were collected and analyzed.

Results: Electronic medical records on 297 patients presenting at KAUH were reviewed. Of these, 175 (59%) tested positive for COVID-19 by polymerase chain reaction (PCR) and 122 (41%) tested negative. COVID-19 positive patients were more likely to be males (OR=1.59; 95% CI=1.22-2.07), and non-health care workers (OR=1.53; 95% CI=1.13-2.08). Hypertension (10%), diabetes (10%), and two or more concurrent co-morbid conditions (54.4%), were more prevalent among COVID-19 positive patients. Patients presenting with fever, cough, and loss of sense of taste or smell were more likely to test positive for COVID-19 (p=0.001, 0.008, 0.008, respectively). Radiological evidence of pneumonia was associated with confirmed COVID-19 disease. Dyspnea, cough and gastrointestinal symptoms were not associated with risk of COVID-19 at presentation. On admission, white blood cells, neutrophils,

lymphocytes, eosinophils, basophils, and platelets were significantly lower among COVID-19 positive patients compared to controls. Surprisingly, D-dimer levels were lower among COVID-19 positive patients. Furthermore, only two patients developed thrombosis; one with pulmonary embolism and one with coronary artery thrombosis.

Conclusion: Male gender, hypertension and diabetes were associated with risk of COVID-19 disease in this study population. D-dimer levels were not elevated in COVID-19 patients, and venous thromboembolism was not prevalent in cases, compared to controls. This is in contrast to previous reports on the association of COVID-19 disease with venous thromboembolism in other populations. Thus,

individual and environmental risk factors may play an important role in the pathophysiology of thrombosis in COVID-19 disease.

Table 1 Patient characteristics by group

		All patients N = 279 (%)	COVID-19 Positive N = 175 (%)	COVID-19 Negative N = 122 (%)	Chi- Square Tests <i>P</i>-value
Age group	18 - 29	55 (18%)	31 (18%)	24 (20%)	0.291
	30 - 39	75 (25.3%)	37 (21.1%)	38 (31.1%)	
	40 - 49	58 (19.5%)	34 (19.4%)	24 (20%)	
	50 - 59	68 (23%)	49 (28%)	19 (15.6%)	
	60 - 69	27 (9.1%)	17 (10%)	10 (8.2%)	
	70 - 79	8 (2.7%)	4 (2.3%)	4 (3.3%)	
	80 - 89	4 (1.3%)	2 (1.1%)	2 (1.6%)	
	90 - 100	2 (0.7%)	1 (0.6%)	1 (0.8%)	
Gender	Male	180 (60.6%)	120 (68.6%)	60 (49.2%)	0.001*
	Female	117 (39.4%)	55 (31.4%)	62 (50.8%)	
Ethnicity	Saudi	78 (26.3%)	39 (22.4%)	39 (32.5%)	0.061
	Non - Saudi	216 (73.5%)	135 (77.6%)	81 (67.5%)	
Body Mass Index	< 26	119 (52.2%)	77 (55.8%)	42 (46.2%)	0.331
	26 - 30	54 (23.6%)	31 (22.5%)	23 (25.3%)	
	>30	56 (24.5%)	30 (21.7%)	26 (28.6%)	
Occupation	Health care worker	39 (13.13%)	16 (9.1%)	23 (18.8%)	0.022*
	Non- health care workers	258 (86.9%)	159 (90.9%)	99 (81.1%)	

Disclosures

No relevant conflicts of interest to declare.

Author notes

* Asterisk with author names denotes non-ASH members.

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