Symptomatology of COVID-19, rhinovirus and undifferentiated viral infections in a static military population

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Civilian and serving military populations have several broad demographic differences. These include a younger age, higher level of physical fitness and lower prevalence of comorbidities in the military group. Therefore, the symptomatology of COVID-19 in military patients may not directly correlate with that more widely published in civilian literature.[1–3]

We analysed a static population (n=91) of symptomatic military personnel presenting to a Royal Navy medical team during concurrent SARS-CoV-2 and rhinovirus outbreaks. All patients identified as suspected COVID-19 cases (as per Public Health England criteria)[4] were tested for SARS-CoV-2 using BioFire FilmArray PCR analysis. In some cases, a wider panel was used to test for multiple respiratory pathogens, which allowed for the detection of rhinovirus. The question of interest was whether there were symptoms within this military population which differentiated between the presence or absence of SARS-CoV-2.

Retrospective data collection was undertaken by reviewing the medical records of all symptomatic patients tested for SARS-CoV-2 in addition to those with a positive SARS-CoV-2 PCR result from tests taken during screening serials. The test result for each patient was noted alongside the documented symptomatology for their episode. Statistical significance of the difference between SARS-CoV-2-positive and SARS-CoV-2-negative test status for each symptom was determined using Fisher's exact test. A p value of <0.05 was deemed to signify statistical significance.

A total of 91 patients met the criteria outlined earlier. Of these, 12 were lost to follow-up, all as a result of moving to another primary care facility. Of the remaining dataset, 21 patients tested positive for SARS-CoV-2 and 58 tested negative, 5 of which tested positive for rhinovirus. No patients tested positive for both SARS-CoV-2 and rhinovirus. A wide range of symptoms were described, all of which are detailed in Table 1. Two of those who tested positive for SARS-CoV-2 remained asymptomatic throughout (Table 1).

There was a statistically significant difference in SARS-CoV-2-positive or SARS-CoV-2-negative test status for those with the grouped symptoms of loss or change of sense of smell or taste and the symptom of shortness of breath (both more likely in SARS-CoV-2-positive cases) alongside sore throat (more likely in SARS-CoV-2-negative cases). The remainder of documented symptoms revealed no difference of statistical significance. Interestingly, this does not correlate with civilian data in studies on younger adults, in which shortness of breath is described as uncommon.[5] The rhinovirus-positive cases were not analysed as a separate subgroup as not all symptomatic cases were tested for rhinovirus.

These results should be treated with caution on account of the format of data collection, which relied on reporting and documentation of symptoms, and the large number of symptoms included in the analysis which increased the risk of statistically significant findings arising by chance. The attrition rate from the study was unlikely to have been influenced by the patient's symptomatology, so this is an unlikely source of bias.

This study raises the notion that the presence of shortness of breath in military patients should increase a clinician's suspicion for COVID-19 in the context of the current pandemic. However, due to the limitations of the study, the presence of a sore throat should not be assumed to indicate that COVID-19 is not present.

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Table 1 Symptoms documented for SARS-CoV-2 positive and negative patients alongside the P value relating to the difference derived using Fishers exact test.

Symptom	SARS-CoV-2 positive (n=21)	SARS-CoV-2 negative (n=58)	P value
Change/loss of taste/smell	13	8	<0.0001
Feeling febrile	7	21	1
Cough	15	52	0.07
Nasal congestion	2	8	1
Facial/sinus congestion	1	1	0.5
Rhinorrhoea	3	11	0.7
Sore throat	2	25	0.007
Headache	2	15	0.2
Fatigue	4	5	0.2
Wheeze	0	1	1
Chest tightness	1	3	1
Shortness of breath	7	5	0.01
Light-headedness	0	2	1
Muscle ache	2	3	0.6
Back pain	1	1	0.5
Night sweats	0	2	1
Photophobia	0	2	1
Swollen glands	0	1	1
Arthralgia	1	0	0.3
Nausea and vomiting	0	1	1

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Ethics approval This study was classified as a quality improvement project and therefore formal ethical approval was not deemed necessary. Internal registration of the project was undertaken with corresponding entries in patient medical records when access was gained for the purpose of the study. All data were anonymised.

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