Conclusions Our study suggests that PE in COVID-19 is more common in males and in those with COVID symptoms greater than 2 weeks, high oxygen requirements and highly elevated D-dimers. There should be a low threshold for investigating such patients for PE. Moreover, we found COVID-19 patients with PE have high likelihood of having a bilateral pulmonary distribution with right heart strain.

P88 INITIAL ROUTINE LABORATORY TESTS CAN BE USED TO PREDICT CLINICAL COURSE IN PATIENTS HOSPITALISED WITH COVID-19

RL Young, KV Mullins, A Ainley. *Barking, Havering and Redbridge University Hospitals NHS Trust, Romford, Essex, UK*

10.1136/thorax-2021-BTSabstracts.198

Background Previous work has related demographic and clinical characteristics to clinical course and outcome of patients hospitalised with COVID-19.¹ We sought to evaluate if initial routine laboratory test results could be utilised to predict length of inpatient stay (LOS), need for non-invasive (NIV)/invasive mechanical ventilation (IMV) and admission to an intensive care unit (ICU). We also sought to establish if C-reactive protein levels related to radiographic disease severity.

Methods A retrospective analysis was carried out on a cohort of 567 patients with a laboratory confirmed diagnosis of COVID-19 admitted during the second wave of the pandemic between April 2020 and May 2021 including descriptive statistics and multivariate and regression analysis. Radiological severity was based upon previously proposed scoring systems.²

Results Of the 567 patients included, 342 (60%) were male, mean age 61 years, 318 (56%) were Caucasian, 143 (25%) Asian and 35 (6%) Black. Raised admission d-dimer and urea levels correlated with longer LOS ($r = 0.17$ and 0.16 respectively, $p < 0.01$). Rising C-reactive protein and d-dimer correlated with increased risk of requirement for admission to ICU ($r = 0.27$ and 0.19 respectively, $p < 0.001$), need for NIV (Pearson's correlation 0.26 and 0.15 respectively, $P < 0.01$) and progression to IMV ($r = 0.15$ and 0.14 , $p < 0.05$). A correlation between initial routine blood results and death was not detected. C-reactive protein correlated with radiographic disease severity ($r = 0.32$, $p < 0.001$).

Conclusions Abnormalities in initial laboratory test results may be utilised to risk stratify patients presenting to secondary and tertiary care with COVID-19, may help predict clinical course and in doing so facilitate more efficient and streamlined delivery of care and resource utilisation with likely significant impact on patient outcomes.

REFERENCES

- Cheng D, Calderwood C, Skjellberg E, et al. Clinical characteristics and outcomes of adult patients admitted with COVID-19 in East London: a retrospective cohort analysis. *BMJ Open Respiratory Research* 2021;8:e000813.
- Monaco CG, Zaottini F, Schiavini S, et al. Chest x-ray severity score in COVID-19 patients on emergency department admission: a two-centre study. *Eur Radiol Exp*. 2020;4(1):68.

P89 VITAMIN D DEFICIENCY INCREASES SUSCEPTIBILITY TO COVID-19 INFECTION

S Kumar, R Ragatha, S Waring, G Gamtkitsulashvili, A D'Souza, M Mahenthiran, S Tan, M Parsons, S Visuvanathan, A Sefton, U Ekeowa, P Russell. *The Princess Alexandra Hospital, Harlow, Essex, UK*

10.1136/thorax-2021-BTSabstracts.199

Background Vitamin D plays a vital part in modulating the immune system, with Vitamin D deficiency leading to increased susceptibility to infection.¹ There is some evidence to suggest Vitamin D may play a protective role in the prevention of COVID-19 infection in hospitalised patients,² but the topic remains controversial. Our study aims to investigate if low Vitamin D levels correlate with increased risk of COVID-19 infection, thereby representing a modifiable risk factor for COVID-19 infection.

Method A retrospective observational study was conducted on 3198 health care workers of a Greater London District General Hospital, who had undergone testing for 25-OH Vitamin D levels and COVID-19 antibody in June 2020. In accordance with NICE guidelines, Vitamin D deficiency was defined as less than 25 nmol/L, insufficiency as 25–50 nmol/L, and those with levels over 50 nmol/L were used as control comparisons. Evidence of previous SARS-CoV-2 infection was assessed by detection of SARS-CoV-2 IgG antibodies. Regression analysis was performed to determine independent significance, accounting for age and gender.

Results 3191 participants were included in this study, with age ranging from 19–78 years (mean 42.9) of which 78.2% were female. Both age and gender were not independently associated with positive SARS-CoV-2 IgG antibodies. 1997 (62.6%) participants had Vitamin D levels within the normal range, 899 (28.2%) participants had insufficient levels and 302 (9.4%) had Vitamin D deficiency. Both Vitamin D deficiency (OR 1.61, $p = 0.002$) and insufficiency (OR 1.33, $p = 0.006$) independently correlated with significantly increased incidence of positive COVID-19 antibodies than personnel with normal Vitamin D levels.

Conclusions We report the largest single-centre study investigating the impact of low Vitamin D levels within healthcare workers to date. Significant correlation between low levels of Vitamin D and previous COVID-19 infection was identified. Oral Vitamin D supplementation to maintain levels > 50 nmol/L may play a protective role against COVID-19. Larger studies are needed to investigate the role of Vitamin D supplementation in healthcare workers for further COVID-19 waves.

REFERENCES

- Aranow C, et al. *Journal of Investigative Medicine* 2011;59:881–886.
- Nogues X, et al. *J Clin Endocrinol Metab*. 2021 Jun 7:dgab405.

P90 USE OF PROCALCITONIN TO PREDICT MORBIDITY AND MORTALITY IN COVID-19

S Kumar, A D'Souza, G Gamtkitsulashvili, S Waring, Y Narayan, G Collins, O Taylor, S Jiwani, K Patrick, A Sethuraman, S Naik, S Kuckreja, R Ragatha, M Anwar, U Ekeowa, P Russell. *The Princess Alexandra Hospital, Harlow, Essex, UK*

10.1136/thorax-2021-BTSabstracts.200

Background Procalcitonin (PCT) is an established biomarker of acute bacterial infection, and elevated levels of PCT may correlate with increased severity in patients with COVID-19 infection.¹ Here, we assess if initial PCT levels are a viable prognostic marker to predict significant morbidity and mortality outcomes for hospitalised patients admitted due to COVID-19 infection.

Method We performed retrospective analysis of initial blood results taken from 1189 patients with RT-PCR positive COVID-19 infection presenting to our District General