Preoperative CT thorax as a COVID-19 screen

Editor

Early detection of infection in hospital patients and a safe working environment for staff is important to stop the spread of SARS-CoV-2[1-3]. Reverse transcriptase-polymerase chain reaction (RT-PCR) test is currently the gold standard for the diagnosis of SARS-CoV-2 infection[4,5]. Although routine testing for COVID-19 before any urgent or elective surgery has been widely recommended[1-5], the availability of diagnostic testing kits has been constrained by supply shortages including our centre. Some studies have evaluated thoracic CT as a diagnostic tool for COVID-19 with sensitivity in patients with respiratory symptoms.

We developed a protocol for CT thorax as a preoperative screening tool (unifocal or multifocal ground-glass opacities were considered as suspicious or positive for COVID-19). The absence of COVID-19 symptoms during hospital stay or a negative RT-PCR test was considered as the gold standard.

From March to April 2020, 339 preoperative scans were performed (309 patients) with 75 (22%) before an elective operation and 264 (77·9%) with an acute surgical presentation (85·2% of urgent and 98·7% of elective patients had no respiratory symptoms). One quarter of patients (80/309) were RT-PCR tested for SARS-CoV-2 with 2% positive (*Table 1*). Chest CT had a sensitivity of 66·7% (95% CI: 30–90·3) and a specificity of 98·8% (95% CI: 97–99·5) for COVID-19 with positive and negative predictive values of 50% (95% CI: 21·5–78·5) and 99·4% (95% CI: 97·8–99·8) respectively.

These findings are consistent with the background prevalence estimated by serology in the community and published data on scan sensitivity varying according to whether patients had symptoms or not. The specificity and positive predictive values were higher than previously reported in the literature, perhaps explained by the high rate of asymptomatic patients of our study. These results support the consideration of chest CT as a useful tool to rule out COVID-19 pneumonia more than as an instrument to rule out SARS-CoV-2 infection where RT-PCR tests are in short supply. It is crucial to know patients are free of the virus to protect staff and other patients[6]. Interviews with patients for elective procedures can be done remotely with enhanced screening of those considered at risk of exposure or active infection[7].

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Table 1 Clinical characteristics

	All CT thorax (*n* = 339), No. (%)	Urgent CT thorax (*n* = 264), No. (%)	Elective CT thorax (*n* = 75), No. (%)	*p* value
Age (years)	60·95 ±17·6	60·8 ±18·7	61·5 ±12·5	0·726
Male sex	187 (55·5)	146 (55·3)	41 (54·7)	0·922
COVID-19 symptoms	40 (11·8)	39 (14·8)	1 (1·3)	0·001
Type of surgical diagnosis				
No surgical diagnosis	11 (3·2)	11 (4·2)	0 (0)	0·072
Benign	89 (26·3)	76 (28·8)	13 (17·3)	0·047
Malignant	108 (31·9)	46 (17·4)	62 (82·7)	<0·001
Trauma	9 (2·7)	9 (3·4)	0 (0)	0·105
Infectious	122 (36·0)	122 (46·2)	0 (0)	<0·001
RT-PCR test for SARS-CoV-2	92 (27·1)	83 (31·4)	9 (12·0)	0·001
Chest CT findings suggesting COVID-19	8 (2·4)	8 (3)	0 (0)	0·127
Confirmation of COVID-19 diagnosis	6 (1·8)	6 (2·3)	0 (0)	0·188

CT, computed tomography; COVID-19, coronavirus disease 2019; RT-PCR, reverse transcriptase polymerase chain reaction. Percentages of groups of type of surgical diagnosis do not add to 100% due to rounding.

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