Chronic liver disease is not associated with severity or mortality in Coronavirus disease 2019 (COVID-19): a pooled analysis

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In the ongoing Coronavirus disease 2019 (COVID-19) pandemic, there is a pressing need to identify clinical factors that are predictive of disease severity. The development of accurate algorithms and risk stratification models, incorporating both clinical and laboratory variables, may aid in optimizing allocation of limited resources. In general, chronic liver disease is associated with increased severity and mortality for pneumonias [1,2]. Moreover, as in the severe acute respiratory syndrome coronavirus (SARS-CoV) and in the Middle East respiratory syndrome coronavirus outbreaks, hepatic injury has been reported in cases of severe COVID-19 [3]. Due to the limited number of patients with chronic liver disease within individual studies on COVID-19 to-date, the impact of a history of hepatic pathology on COVID-19 progression and outcomes is unknown. Therefore, the aim of the present article was to analyze if co-morbid chronic liver disease in patients with laboratory-confirmed COVID-19 is associated with increased odds of the severe form of disease or mortality.

An electronic search of Medline (PubMed interface), Scopus, and Web of Science was performed, employing the keywords 'chronic liver disease' OR 'cirrhosis' OR 'hepatitis' AND 'coronavirus 2019' OR 'COVID-19' OR '2019-nCoV' OR 'SARS-CoV-2' in all fields, between 2019 and present time (i.e. 18 March 2020). No language or date restrictions were applied. All documents were screened by title, abstract, and full text. Articles reporting data on the rate of chronic liver disease in adult (>18 years of age) COVID-19 with or without severe illness or mortality were finally included in a pooled analysis. A clinically validated definition of 'severe disease' (i.e. patients requiring mechanical ventilation, vital life support, ICU admission) was required. Liver pathology was defined as chronic liver disease, cirrhosis, steatosis, or chronic hepatitis. No exclusion criteria were applied. The reference list of all included articles was also hand-searched (through forward and backward citation tracking) to identify additional eligible studies. As the expected data set was limited and would include case series, no study risk of bias or publication bias evaluation was performed.

A pooled analysis was performed to estimate the odds ratio (OR) and 95% confidence interval (CI) of chronic liver disease in COVID-19 patients with or without severe disease and in non-survivors versus survivors. The statistical analysis was carried out using MetaXL, software Version 5.3 (EpiGear International Pty Ltd., Sunrise Beach, Australia), with inverse-variance model. The study was performed in compliance with the declaration of Helsinki and local legislation.

After removing duplicated or overlapping publication, a total number of 39 documents were initially identified. Among these, 34 were excluded because they were review articles (n = 10), did not report data on COVID-19 disease (n = 12), did not provide the rate of chronic liver disease (n = 7), or were editorial materials (n = 5). Two additional studies were identified from the reference list of included articles. A total of seven articles were selected. One further article by Guan *et al.* [4] was excluded as it only considered the rate of hepatitis B surface antigen positivity without assessment of chronicity. Thus, the final pooled analysis included six studies [5–10]. Four studies compared chronic liver disease in severe vs. non-severe cases, with a total sample of 702 confirmed COVID-19 patients, 371 of whom (52.8%) were classified as having severe disease [5–8]. Two studies with 202 patients compared the rate of chronic liver disease in COVID-19 patients who did not-survive vs. survived, with 100 (49.5%) classified as non-survivors [9,10].

The results of pooled analysis are presented in Fig. 1. Chronic liver disease was not found to be associated with increased odds of the severe form of COVID-19[(OR 0.96 (95% CI 0.36–2.52), I^2 = 0%, Cochran's Q, P = 0.86]. Moreover, chronic liver disease was neither significantly associated with increased odd of mortality in COVID-19 patients [OR 2.33 (95% CI 0.77–7.04), I^2 = 30%, Cochran's Q, P = 0.23].

Based on pooled results of early COVID-19 data, chronic liver disease seems to play a minor role in influencing patient progression towards the severe form of disease. A non-significant trend towards increased odds of mortality in COVID-19 patients with chronic liver disease should continue to be evaluated in larger studies. Therefore, data to-date would not apparently support the inclusion of chronic liver disease into risk stratification models as clinical predictor of severe disease.

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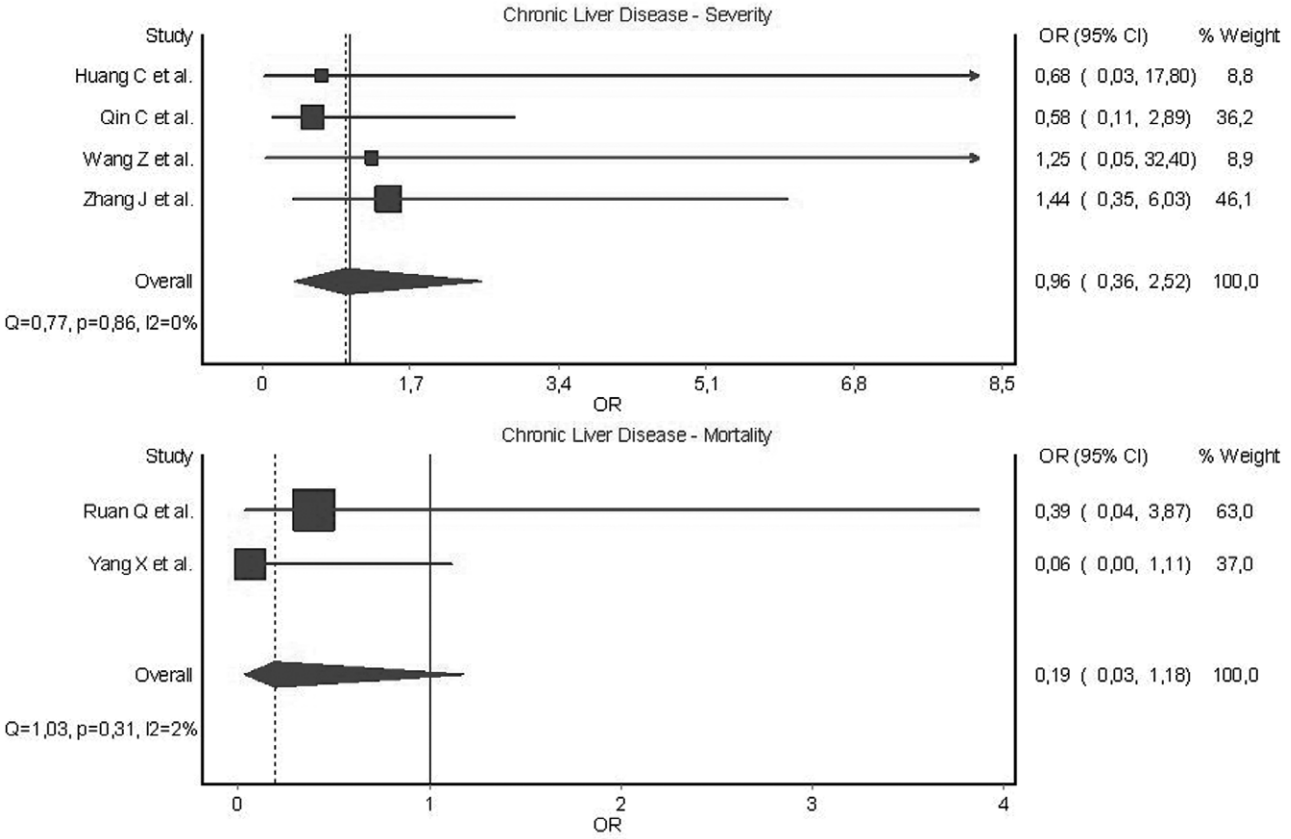

Fig. 1 Forest plots of odds of severe disease and mortality in laboratory-confirmed COVID-19 patients with co-morbid chronic liver disease.

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Conflicts of interest

There are no conflicts of interest.

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Association between occupation type and progression of Barrett's oesophagus to oesophageal adenocarcinoma

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Barrett's oesophagus is the principal precursor lesion of oesophageal adenocarcinoma (OAC). Gastro-oesophageal reflux is the major aetiological risk [1].

Occupational exposure has historically been known as a comorbid factor for certain chronic diseases and some cancers, most notably bladder cancer among chimney sweeps [2]. Very little is known about the relationship