

## Clinicopathological characteristics of 8697 patients with COVID-19 in China: meta-analysis

We have read with great interest the meta-analysis published by Zhu *et al*<sup>1</sup> summarising the clinicopathological characteristics of Chinese patients affected by COVID-19. Though the study offers an analysis of the clinical symptoms and pathological characteristics of these patients, it has several limitations which threaten its internal validity and pose concerns for the interpretation of the overall findings. Notably, the authors acknowledge the study's limitations and provide a recommendation to conduct further studies. Nevertheless, we would like to comment on some of the important points, which could have improved the study in a considerable manner.

First, it would have been more appropriate to have clearly defined inclusion and exclusion criteria within the methodology of the paper. Defining such characteristics is important due to varying clinical and laboratory presentations by different age groups.<sup>2-4</sup> Second, the title and methodology both state that the study determines clinicopathological characteristics. However, only laboratory findings have been presented. In such a comprehensive meta-analysis, the pathological characteristics of patients with COVID-19 should have included also radiological findings.<sup>5,6</sup> Depending on the severity of the disease, the evidence suggests an increased inflammatory response with higher inflammatory markers.<sup>7</sup> Hence, in tables 2 and 3, it would have been more prudent to categorise the severity of patients with COVID-19, along with the laboratory findings.<sup>5</sup>

Third, a retrospective study by Mao *et al* demonstrated that patients with COVID-19 were presented with hyposmia and hyposmia as initial symptoms.<sup>7</sup> This was evident from various studies in different countries that loss of smell is a marker of COVID-19

infection.<sup>8</sup> Anosmia is especially evident in patients with mild to moderate coronavirus disease, in which symptoms related to olfaction occur as the earliest symptoms in more than 12% of the cases, leading to earlier diagnosis of COVID-19.<sup>9</sup> In addition, other presenting symptoms, such as eye congestion and other neurological manifestations, appear to have been missed in this study.<sup>7,10</sup> Furthermore, Zhang *et al* reported drug hypersensitivity and urticarial rash as symptoms associated with COVID-19.<sup>11</sup> Regarding the laboratory findings, eosinopenia was associated with hospitalised patients with severe COVID-19, information which is also missing from laboratory findings in table 3.<sup>11</sup>

Finally, the inclusion of information regarding comorbidities of patients with COVID-19 would have given a better perspective on the association of clinicopathological characteristics, as there is evidence that patients with hypertension showed less severe symptoms,<sup>7</sup> in contrast to the higher severity of COVID-19 symptoms seen in the diabetic patients.<sup>12</sup>

We feel that future studies should be designed in a more comprehensive manner in order to account for all possible clinical, imaging and laboratory parameters of this new pathology. Such knowledge is imperative before clinical and/or research decisions based on clinicopathological characteristics about patients with COVID-19 can be made.

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