

Hypertension and diabetes mellitus in patients with COVID 19: a viewpoint on mortality

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The outbreak of coronavirus disease 2019 (COVID 19) by the novel corona virus SARS-CoV2 is the leading worldwide healthcare problem due to its contagious nature, high morbidity and mortality rates. The present pandemic has also brought an emerging situation regarding the cardiovascular complications and comorbid disease mainly pointing out hypertension (HT) and diabetes mellitus (DM). Early clinical observations have shown that HT and DM are the main comorbid disease along with cardiovascular disease, chronic obstructive lung disease and malignancies [1]. The incidences of hypertension, cardiocerebrovascular diseases and diabetes have been found to be about twofold, three and twofold, respectively, higher in ICU/severe cases than in their non-ICU/severe counterparts by the meta-analysis of Li *et al.* [2]. Similarly the age and certain co-morbidities (hypertension, diabetes, etc.) have been reported to be important risk factors for mortality among the 25 death cases of with COVID-19 [1]. This worrisome situation has been further aggravated by the potential upregulation of angiotensin converting enzyme 2 in hypertensive and diabetic patients and, more interestingly, in those receiving angiotensin converting enzyme inhibitors and angiotensin receptor antagonists, thereby facilitating the inoculation of lung tissue by COVID 19 [3]. Within this context, these findings might be regarded as an alerting scenario with gloomy consequences for those with HT and DM. This concern has been surpassed by the recommendation of cardiovascular societies against to the discontinuation of angiotensin converting enzyme inhibitors and rennin–angiotensin aldosterone antagonist due to the outbreak of COVID 19 [4].

Recently, Wang *et al.* [5] have reported the analysis of hospitalized patients over the age of 60 with COVID-19 by the 2019 novel coronavirus SARS-CoV-2. In elderly population with a mean age of 71, HT has been found to be the most common comorbid disease, followed by DM, cardiovascular disease, cerebrovascular disease chronic kidney disease and chronic obstructive lung disease. However, regression analysis revealed that age, cardiovascular diseases and chronic obstructive lung diseases have been found to be independently associated with mortality [5].

It is worthwhile to reemphasize that age is an independent prognostic factor even in elderly population. In contrast to perturbing previous reports where hypertension and diabetes are reported to be the most common comorbid diseases in COVID 19 pandemic [1,2]. HT and DM have been found not to be a poor prognostic factor in elderly hospitalized patients [5]. On the other hand, cardiovascular disease and chronic obstructive pulmonary diseases are independent prognostic factors in association with age in hospitalized elderly COVID 19 patients. It should be underlined that description of cardiovascular disease which is found to be an independent prognosis predictor comprises heart failure, arrhythmia and coronary artery disease. In this context, Wang *et al.* [5] report plays a pivotal role while interpreting the comorbid disease in regard to mortality. Indeed, the rates of HT and DM in deaths of COVID 19 are not any different from the prevalence of Chinese population. The prevalence of hypertension in Chinese population ≥ 70 years has been reported to be around 60% [6]. Likewise, almost 60% of middle-aged and elderly Chinese have been shown to be diabetic or prediabetic with an increasing prevalence by ageing [7]. On the contrary, a recent meta-analysis has demonstrated that diabetic patients with COVID-19 infection have a higher risk to be admitted to ICU during the infection and higher risk of mortality [8]. Likewise, Zuin *et al.* [9] has reported that HT is the most common cardiovascular comorbidity which seems to significantly increase the mortality risk in COVID-19 patients. However, these two meta-analyses has focussed on either HT or DM itself individually rather than assessing the contributions of age and all comorbid diseases. Apparently, we do need more comprehensive analysis of systematically recorded COVID 19 patients' data.

Besides DM and HT are the two well known cardiovascular risk factors having major impact on all-cause mortality [10]. Given the strong age-dependence of these comorbidities, age adjusted analysis should also be taken into consideration while assessing their potential impact on mortality as well as the severity of COVID-19 pandemic. We would like to emphasize that frightening fatality of COVID 19 is largely an age-dependent

phenomenon in association with the transmissibility and pathogenicity of SARS-CoV-2 itself. Regarding the Wang *et al.* [5] report, we may assume that HT and DM unless complicated do not have worsening effect on the mortality of COVID pandemics in elderly. Therefore, it is crucially important to pay full attention on strategies for preventing the spreading of the current COVID-19 and the future outbreak, and for developing therapeutics and vaccine against COVID-19. The continuing inflow of new clinical data during the outbreak of COVID 19 would elucidate the apprehension on HT, DM and renin–angiotensin system blockers.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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