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COVID-19 mortality: are comorbidities, socio-economic status and ethnicity more important than cancer?

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The coronavirus disease 2019 (COVID-19) pandemic led to the rapid sharing of data within the medical community on the populations at risk of severe forms of the disease. Among them, patients with comorbidities such as cardiovascular, respiratory and metabolic diseases, but also elderly patients and those with cancer have been identified as being at increased risk of mortality from severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection (1).

Raez *et al.* (2) highlighted again the increased mortality due to COVID-19 in cancer patients. This retrospective multicenter study covering the first 10 months of the global pandemic assessed the in-hospital mortality in COVID-19 patients with cancer compared to those without cancer. As expected, the mortality rate was higher in cancer patients (23.8%) compared to non-cancer patients (11.4%), with an odds ratio of 2.35 (95% CI: 1.74–3.16, $P < 0.001$). This mortality rate in cancer patients is consistent with other studies, although it has been variable between countries and management situations (inpatient versus outpatient) (3,4). Patients with haematologic malignancies appear to be at even greater risk than patients with solid malignancies, possibly due to their underlying immunosuppression (5). Acute myeloid leukaemia and myelodysplastic syndromes were independent risk factors for COVID-19 mortality (6,7).

Despite the growing number of studies, it may be

difficult to assess the relative share of increased mortality directly related to the cancer itself. Indeed, comorbidities which are quite frequent in this population, advanced age, socio-economic or ethnic risk factors could be important confounding factors.

Many studies have shown that comorbidities are independently associated with excess mortality in COVID-19 cancer patients (4,8,9). The cancer population in the study by Raez *et al.* (2) had comorbidities, with significantly higher rates of hypertension, chronic obstructive pulmonary disease, chronic kidney disease, coronary heart disease, and smoking compared to non-cancer patients. These differences in comorbidities may account for at least part of the large difference in mortality between these two populations, as they were not adjusted for comorbidities.

Other studies (10,11) have also reported that there was no significant difference in mortality between cancer and non-cancer patients when they were matched or adjusted on comorbidities.

Even after considering cancer and comorbidities as risk factors for COVID-19, there are still differences in mortality between patients. During the pandemic, the disparity between ethnicities was clearly visible. Minorities such as African-Americans or Hispanics had an increased risk of being infected and an increased risk of mortality (12)

compared to the white population.

In the United States study presented here (2), 46.6% of the patients with COVID-19 were Hispanic, 31.5% Black and 16.8% non-Hispanic White. Data were collected from six hospitals in South Florida in 2000. During the same period in Florida, the population was 58% non-Hispanic White, 26% Hispanic, and 15% Black (13). The different distribution of ethnicities in the general population and in COVID-19 patients shows that minorities are more affected by COVID-19 in Florida, as elsewhere in the USA. These ethnic disparities have been found for solid and haematologic malignancies (14,15). Indeed, it seems important to adjust the analysis of COVID-19 mortality according to ethnicity, as it was done here by Raez *et al.* (2).

These disparities can be explained by several factors. Some populations tend to have more comorbidities, notably hypertension and obesity, which are risk factors for excess mortality from COVID-19 (16). But in addition to differences in medical conditions, differences in socio-economic status are important to consider. Some put people at higher risk of contamination, such as living in more populated areas and having jobs that are less often accessible to telework. Others increase the risk of severe forms of the disease, such as a delay in treatment due to poorer access to health care because of poorer social security coverage and lower income. These ethnic health disparities are also well documented in cancer care (17,18). The black population tends to have a worse prognosis, with a higher incidence of cancer than the white population, later diagnosis of cancer due to lack of prevention and screening, and poor access to treatment and clinical trials, resulting in a higher cancer mortality (19). We do not know yet the impact of delays in cancer management for this already poorer outcome patient population, which was more affected by COVID-19 and by the socio-economic consequences of the pandemic itself. Although we only have data on ethnicity disparities in a few countries due to different regulations regarding on data collection, we could easily extrapolate them to other countries with a multiracial population.

Thus, when talking about cancer patients with COVID-19, it is important to consider cancer and its treatment on the one hand, but also comorbidities, socio-economic parameters and ethnicity as risk factors for severe forms.

Today, life expectancy in the United States and worldwide has tended to decline over the past two years (20,21) partly due to COVID-19, and with persistent and increasing ethnic differences. We must continue to work for

equality among our cancer patients, to provide them with the same care regardless of their ethnicity.

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