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Commentary

Commentary: COVID-19 and diabetes

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This is a comment on the recent work published by Wang et al.: the first report compiling epidemiologic data from COVID 19 and Diabetes [1]. As we understand there is an urgent need to publish the facts and statistics of this everyday changing pandemic and in an effort to reporting and informing the medical community real-time, erroneous conclusions might be generated. Consequently, the public and healthcare providers might have wrong assumptions and misleading interpretations. In this commentary, we highlight some of the limitations and flaws we identified and thereafter, we summarize what we already know from previous published data on diabetes and sepsis. This communication should also serve as call for expedited well-designed epidemiologic and interventional studies, only then, factual conclusions could be drawn.

The first problem we find on this report is that conclusions are driven from small cohorts. The denominator is 1102 when he mentions incidence of diabetes (7.3%). When he reports mortality in patients with no diabetes (0.9%) the denominator is 15,536, this is a much larger cohort. We would need to know the exact prevalence of diabetes in the largest cohort to make a more precised comparison. Besides that, when the report compares how many patients required care in the ICU (Intensive Care Unit) vs. how many patients did not require care in ICU care, the denominator of cohort is even smaller:138.

There is a chronological factor skewing the numbers compared with current status, the number of cases reported at the current moment (March 22nd, 2020) worldwide is 311,988, 13,407 deaths and 93,790 recovered cases, the report is from February 24th 2020, when the virus had caused a total of 79,331 confirmed cases and 2618 deaths.

These data is not valid to draw conclusions, it might be a "trend" however we cannot draw a valid conclusion.

Other observation we encounter is that the studied Asian population differs from the heterogeneous population in the United States, presentations and outcomes might differ given these different populations.

Another limitation we identify is the lack of clinical information to be able to perform risk stratification within the diabetic population. We do not have information about diabetes duration, time of diagnoses; at times, patients newly diagnosed with diabetes have stress-induced hyperglycemia, those patients, based on previous data, have the poorest outcomes when they become septic. In this report the type of diabetes is not specified, we know Type 1 and Type 2 Diabetes are very different entities. Clinical characteristics at baseline are not presented including medications and comorbidities. Either diabetes control prior to admission was not mentioned neither glycemic control, treatment and management in the inpatient setting (i.e implementation of insulin protocols or availability of an inpatient diabetes team)

Lastly, and in my opinion, a very important factor to mention and probably one of the main factors driving morbidity and mortality would be the availability of appropriate resources at the time of each patient' hospitalization, Was the healthcare system already saturated and overwhelmed?

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In the next paragraph I would focus in what we really know and what we don't know about "Diabetes and Infection" I will point out statements and facts based on previous literature [2–17]

1. There is preclinical data in animal models proven a dysfunction of the immune system (humoral and cellular) and there is an abnormal inflammatory state in patients with diabetes and/or hyperglycemia. There is an increased susceptibility for patients with diabetes to have an infection.
2. Hyperglycemia is an important factor for patients with diabetes that influence sepsis incidence and course.
3. Hyperglycemia is also and important prognostic factor when patients have sepsis and do not have diabetes.
4. We do not know if certain medications worsen or improve these outcomes with the exception of insulin. Insulin therapy has been demonstrated in previous data to decrease inflammation, on the other hand clinical studies have found that too intense glycemic control is detrimental to our patients in the ICU, especially in patients in medical ICUs compared with patients in Surgical ICU units.
5. Hypoglycemia is detrimental to critically ill patients
6. Hypoglycemia is a negative prognostic factor for critical ill patients

Finally we draw the conclusion we need well-designed epidemiological and interventional studies with appropriate methodology and design to appropriately identify risk factors in our diabetic population. We hope our colleagues in Japan, Italy and Spain release their data soon and we can draw more concise conclusions.

Until then, given the current circumstances we need immediate action from our medical societies to make appropriate guidelines and protocols for us in real-time despite the limited available evidence, especially when there is an anticipation of limited hospital resources and strain of healthcare workers. Should we change and modify our current practice temporarily to meet the demands? General endocrinologists, primary care providers, patients and caregivers all need guidance to be able to manage diabetes during this pandemic in real-time.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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