Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Spotlight on Special Topics

MALE SEX, HLA-C*04:01 AND COVID-19: A RISKY CONSTELLATION

Poster Contributions
For exact presentation time, refer to the online ACC.22 Program Planner at https://www.abstractsonline.com/pp8/#!/10461

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Background: Clinical course of patients with COVID-19 varies dramatically. Identification of factors that lead to severe clinical course is crucial for timely allocation of resources. We recently identified a risk allele for severe course of COVID-19 and sought to evaluate for potential sex differences in cardiac injury among carriers of that allele.

Methods: In spring 2020, our multicenter study analyzed the association of human leukocyte antigens (HLA) with severe course of COVID-19. A total of 435 patients from Germany (n=135), the United States (n=147), Switzerland (n=20), and Spain (n=133) were HLA typed. Enrolled patients were 18 years and older with COVID-19 confirmed by real-time quantitative polymerase chain reaction. The full clinical spectrum from mild to severe cases was represented in the cohort. Severe clinical course was defined as the need for invasive ventilation. After an HLA risk allele was identified, we evaluated for sex specific differences in cardiac injury based on high sensitivity troponin T on admission (hs-TnTa) and the maximum high sensitivity troponin (hs-TnTmax) during hospitalization.

Results: HLA-C*04:01 was identified as risk allele for severe course of COVID-19 (p=0,0074). Carries of HLA-C*04:01 with COVID-19 had twice the risk of intubation (risk ratio 1,5; 95% CI: 1,1-1,2; odds ratio 3,5; 95% CI: 1,9-6,6). An association of hs-TnTa with severity of clinical course (p<0,001) was identified. There was no difference in hs-TnTa in men vs women. However, hs-TnTmax was higher in male carriers of HLA-C*04:01 (n=14; median hs-TnTmax 151 pg/ml) vs male non-carriers (n=63; median hs-TnTmax 38 pg/ml; p = 0,008). There was no difference in cardiovascular risk factors between male carriers and non-carriers of HLA-C*04:01, suggesting that the allele was an independent risk factor. In women (n=27) there was no difference in hs-TnTmax between carriers and non-carriers of HLA-C*04:01.

Conclusion: Men with COVID-19 and HLA-C*04:01 develop higher hs-TnTmax and have a more severe clinical course. The presence of the risk allele has no influence on the hs-TnTmax in women, which could indicate possible protective hormonal effects.