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Risk of COVID-19 in Patients Receiving Anti-VEGF Therapy during the Pandemic

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About the Study

Based on observed disease patterns, Corona Virus Disease 2019 (COVID-19) is a systemic multi-organ viral invasion with microvascular injury [1]. Recent studies indicate that COVID-19 could comprise an obliterative micro-angiopathy consisting of endotheliitis with altered vessel barrier integrity, promoting angiogenesis and a pro-coagulative state [1,2]. Activation of angiogenic pathways could have an important role in inducing and maintaining the viral vascular effects. Vascular Endothelial Growth Factor (VEGF) is known as the most potent inducing factor to increase angiogenesis and vascular permeability [3]. As a result, vascular endothelial cells could become a potential target to fight against COVID-19. Some studies suggest bevacizumab could be beneficial for patients with severe COVID-19 [4-6]. The role of anti-VEGF agents should be deeper investigated. Risk factors for developing severe COVID-19 is retinal disease and patients being ≥ 65 years old [7,8]. Herein, we evaluated the risk of COVID-19 in patients receiving anti-VEGF intravitreal injections during the pandemic period.

The study comprised 431 patients diagnosed with eye conditions (198 men and 233 female), mean age of 76.3 years-old, within one tertiary Spanish Hospital. All patients received intravitreal anti-VEGF therapy (bevacizumab, ranibizumab or aflibercept) in an "as needed" injections regimen. All the patients received, at least, one anti-VEGF intravitreal injection from March to June 2020. Influenza viruses and seasonal coronaviruses and on the viral infection-induced production of inflammatory cytokines.

The patients received an average of 1.47 intravitreal injections from March to June 2020. From the total sample of 431 patients, only 4 patients (3 female and 1 male) tested positive for SARS-CoV-2 (0.86%). Among them, only two had evidence of coronavirus infection and required hospital admission (0.43%), with a mean hospital stage of 8 days. None of them required mechanical ventilation or had other severe complications. No side effects or other symptoms were reported across all patients and no deaths occurred within that period. Compared to general population data from the same region, the SARS-CoV-2 seroprevalence was much lower in those patients who received anti-VEGF intravitreal injection by comparison with baseline region population (0.86% *vs.* 7.4% respectively (P<0.05)). Moreover, the prevalence of hospital admission due to COVID-19 was also much lower in those patients treated with intravitreal anti-VEGF agent by comparison with baseline region population (0.43% vs. 4.1%respectively).

Spain is one of the countries severely affected by the ongoing COVID-19 pandemic. The general SARS-CoV-2 seroprevalence of the studied region was 7.4% [9]. On the contrary, in the same region, the studied anti-VEGF treated population had a SARS-CoV-2 seroprevalence of 0.86%. Only 0.43% of the anti-VEGF treated population required hospital admission, despite the fact that these patients had higher SARS-CoV-2 exposure risk due to the need to go to the hospital during the hard-pandemic period. No deaths occurred within the period across anti-VEGF treated patients [10].

Conclusion

Anti-VEGF agents could have an important role in prevention and mitigating the effects of COVID-19. Microvascular endothelial cell injury could activate the clotting pathway. Thus, endothelial cells are increasingly recognized as potential target to prevent thrombotic events and to accelerate thrombus resolution. The possibility that these cells play an important role in COVID-19 should trigger search for future therapeutic opportunities. These observations could help find potential specific pharmacotherapy for fighting against COVID-19 severely ill patients. Further studies are needed.

Conflict of Interest

The authors have no conflicts of interest.

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