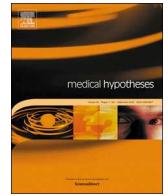




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Coronavirus disease 2019 (COVID 19) and Malaria

Have anti glycoprotein antibodies a role?

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To the dear Editor,

Italian people are actually living a severe crisis due to a Coronavirus disease 2019 (COVID-19). The North of Italy, is particularly affected with a great proportion of severe acute respiratory syndrome. In the northern Italian regions the presence of African people, usually employed in iron-steel factories and agricultural works, is high. Now, among the people recovered in the hospitals with moderate or severe COVID-19, the presence of black people is very low. According to the data of Italian Superior Institute of Health, in Bergamo, one of the cities of Lombardia mostly affect, the black people with moderate to severe COVID-19 are about 1,6% of COVID-19 patients [1]. These data are real because the Italian health system is free and allows all people to access to treatments. So we think that are not underestimation of the number of asymptomatic people of black people affected by COVID-19. We also noted that in central African countries the distribution of COVID-19 is nil or very low as referred by Napoli and Nioi in their work [2]. Why? Because the black people who live in Italy are young and it is known that COVID-19 is more frequent in old people with comorbidities. Or it can be due to a different genetic susceptibility of African people as occur in women and men the latter having higher range of severity and mortality [3,4]. However it is known that in African-Americans the severity of COVID-19 is high so, we think that the theory of immune genetic factors does not completely explain the answer. In addition according to the data of WHO the dashboard of the pandemic in the most African countries is very low and in some nations the total cases of COVID-19 are less than 10 units [5] and nowadays experts still do not know how so few cases of the new virus had been reported despite China, where the virus originated, being the continent's top trading partner. It can be due to a lack of detection or the monitoring efforts are weak [6]. In the African continent malaria is one of the diseases which cause significant morbidity and mortality. We speculate that anti-malarial immunity may also play a role. We know that individuals who have had malaria or asymptomatic malaria have antibodies (IgG) to Plasmodium specific antigens. These antibodies are directed to Glycosylphosphatidylinositol (GPI), the anchor molecules of some membrane proteins of Plasmodium species. Although in malaria previous infection is not fully protective, as evidenced by repeated infections experienced

by people living in endemic areas, clinical presentation among “such immune” people, is less severe than in non-immune people [7]. In addition children who, usually have antibodies to different viruses or bacteria are known to be protected towards COVID-19 [8]. GPI is a phospholipid which can activate leukocytes, trigger the release of pro-inflammatory cytokines and induce the expression of adhesion molecules via Toll like receptors 2 and 4. Anti GPI antibodies may neutralize the toxic effect of Plasmodium GPI. Also coronavirus 19 presents different glycoproteins (GPs): membrane GPs, spike GPs and GPs that have acetyl esterase and hemagglutination properties. These GPs could be recognized by the antibodies produced in malaria and could protect by virus infection or induced a milder disease [9]. In addition COVID-19 and malaria present other similarities. Blood group 0 patients are associated with a low risk of malaria infection [10] probably due to mimicry of A or B antigens by infectious agents [10]. The same occurs in COVID-19. The natural anti histo-blood group antibodies may play a favorable role in antiviral immunity since the viruses may carry ABH structures in their envelope glycoproteins as previously demonstrated for other coronavirus [11]. The second similarity is that the 2 diseases respond to anti-malarials. For some Authors these drugs could represent a sort of chemoprophylaxis against COVID-19 in African countries because they promote also in COVID-19 a virus negative conversion, shortening of the disease course and improving lung imaging findings as seen both *in vitro* and *in vivo* [2,12].

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Conflicts of interest

The authors declare no conflict of interest.

CRediT authorship contribution statement

Aurora Parodi: Conceptualization, Writing - original draft, Writing - review & editing. **Emanuele Cozzani:** Writing - original draft, Writing - review & editing.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.mehy.2020.110036>.

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