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COVID-19 and ethnicity: Does reduced responsiveness to glucocorticoids explain the more aggressive nature of disease among minorities?

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INTRODUCTION

Marked ethnic variations in complications and mortality have been noted following infection with COVID-19.

In the United States, the age-adjusted mortality rate among Blacks is 3.8 times, Hispanics 2.5 times, and Asians 1.5 times higher than Whites. In the United Kingdom, the age-adjusted mortality rate among Blacks is 2.9 times, Pakistani and Bangladeshi 2.2 times, and South Indians 1.8 times than that of Whites. One should consider that the increased mortality seen in BAME may be a consequence of impaired glucocorticoid sensitivity stemming from several intrinsic reasons such as chronic social stress and lower circulating levels of Vitamin D. This study aims to evaluate the effect, or lack thereof, of glucocorticoids on Black, Asian and Minority ethnic groups (BAME) when compared to White populations in the setting of COVID-19 treatment.

PROPOSED METHODS

To assess the variation in glucocorticoid resistance across ethnicities, the skin vasoconstrictor assay, a long-established bioassay of glucocorticoid action, can be utilised in a cross-sectional study. This will require the recruitment of an adequate number of young, healthy volunteers of both genders and a broad cross-section of ethnicities. The skin vasoconstrictor (SVC) assay can be performed on the ventral forearm as previously described with appropriate test solutions containing a potent topical glucocorticoid like beclomethasone dipropionate dissolved in ethanol. The degree of blanching can then be read by two trained observers blinded to the distribution of the test solution on the application sites.

An SVC Assay score will be created on the degree of pallor which will be used as an indicator of the degree of glucocorticoid sensitivity.

PROPOSED RESULTS

Previous work has shown that the skin vasoconstrictor response (SVC), a bioassay of topically applied glucocorticoids, is a measure of steroid potency and, more importantly, a measure of an individual's biologic responsiveness to glucocorticoids. Results from this bioassay have shown that whereas only about 10% of a Caucasian population will display some significant degree of SVC unresponsiveness, a very high proportion of Africans and South Asians failed to show any response, even to high potency agents like beclomethasone dipropionate in high concentrations. This is particularly so when associated with obesity and acanthosis nigricans, a marker of insulin and glucocorticoid resistance.

We suspect that similar results will be obtained in this new study- with high levels of corticosteroid resistance being seen in BAME groups when compared to White populations.

CONCLUSION

Through this cross-sectional study we aim to prove the hypothesis that the BAME populations display a greater degree of corticosteroid resistance when compared to White populations.

Knowledge of these ethnic differences associated with corticosteroid resistance may lead healthcare providers to consider alternative methods of treatment in different populations of COVID-19 patients.

REFERENCES

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