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Relationship Between Serum Cortisol Level and Long COVID Symptoms in Post-Acute COVID-19

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LIINC Long-term Impact of Infection with Novel Coronavirus

Introduction

- Low cortisol levels have been reported in some but not all people with Long COVID[1,2] and with pre-pandemic ME/CFS[3,4]
- Better understanding the role of regulatory molecules like cortisol in Long COVID could provide insight into pathogenesis and treatment
- More data are needed from diverse cohorts

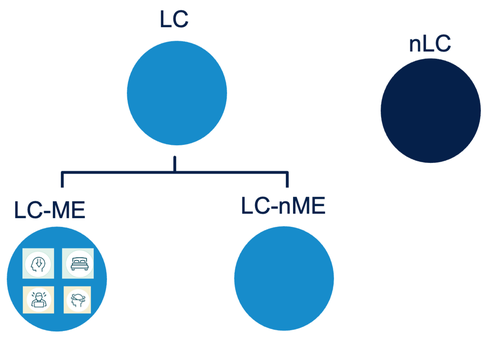
Aim

- To characterize morning blood cortisol levels in a cohort of 200 individuals comparing people with and without Long COVID 3-6 months post-COVID

Methods

- Cross sectional design
- Blood drawn between 8AM and 12PM
- Cortisol levels measured in a clinical laboratory

Definitions



Long COVID (LC): >=1 COVID-attributed symptom at least 3 months after a positive SARS-CoV-2 test result

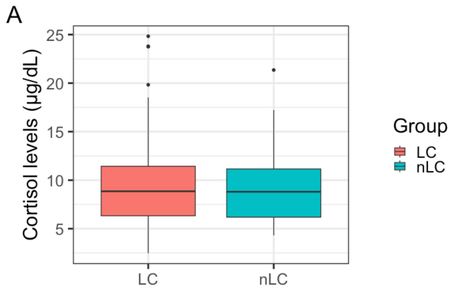
No Long COVID (nLC): zero COVID-attributed symptoms at least 3 months after a positive SARS-CoV-2 test result

Long COVID ME/CFS-like (LC-ME): Long COVID participants who meet an adapted 2015 Institute of Medicine ME/CFS case definition at 3 months[5]

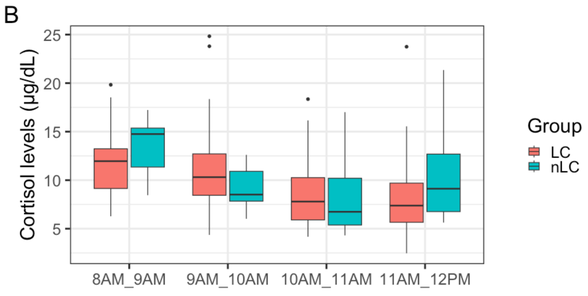
Long COVID non-ME/CFS-like (LC-nME): Long COVID participants who do not meet the adapted 2015 IOM ME/CFS case definition at 3 months

Morning blood cortisol levels do not differ between people with and without Long COVID, however a subset of people with `ME/CFS-like` Long COVID may have altered morning cortisol dynamics

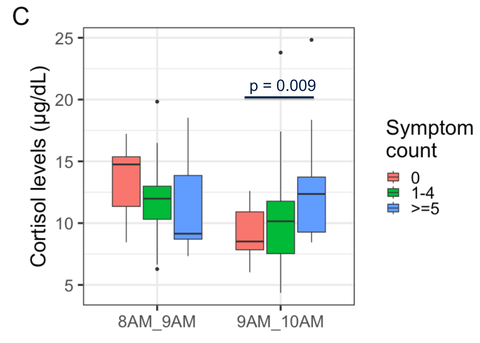
No difference in morning cortisol levels in people with and without LC



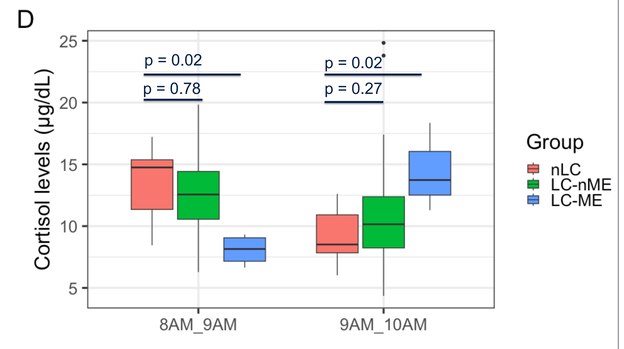
Cortisol levels tend to be lower between 8AM-9AM and higher between 9AM-10AM in people with LC



People with severe LC had lower cortisol levels between 8-9AM and higher cortisol levels between 9-10AM



The LC-ME group appears to drive the observed difference in cortisol levels



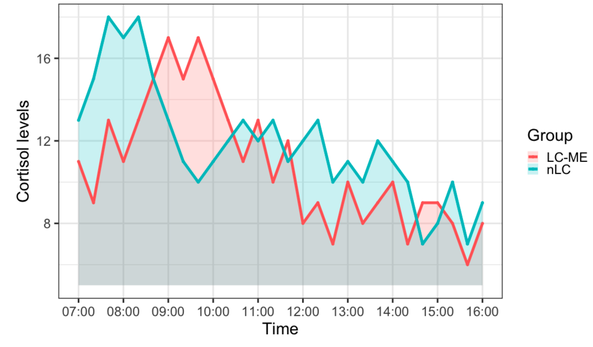
Participant characteristics

Characteristic	Overall (n = 200)	LC (n = 144)	nLC (n = 56)
Age	45	44	48
Female Sex	55%	56%	50%
BMI	26	26	25
Race			
Hispanic/Latino	18%	18%	16%
White	62%	63%	59%
Other	20%	19%	25%
Hospitalized	10%	10%	11%
Days post symptom onset	123	122	124
Sample time (Minutes past midnight)	10:28 AM (628)	10:30 AM (630)	10:18AM (618)

Future work

- Pilot study to compare cortisol secretory patterns between those with and without LC-ME
- Examine the relationship between cortisol dynamics, viral persistence and immunological measures

Hypothetical results of pilot study: Delayed cortisol peak and lower AUC in LC-ME



Acknowledgements

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References

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