

Predictive Accuracy of Revised Geneva Score in Comparison to CHOD Score in Diagnosing Pulmonary Embolism Among COVID-19 Patient

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Introduction

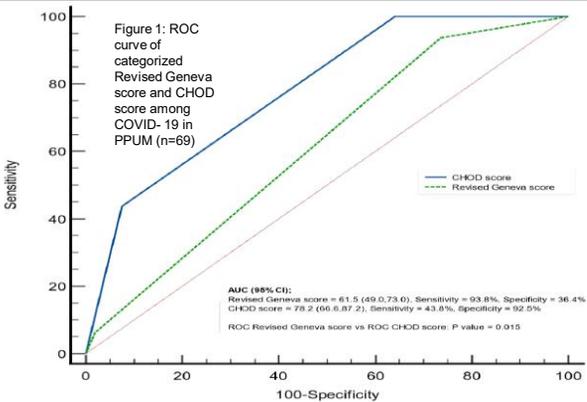
Pulmonary embolism (PE) is a recognized complication in COVID-19 due to its pro-inflammatory and pro-thrombotic effects [1]. Common PE prediction tools like the Wells Score and PERC rule may not be optimal in this context. The Wells Score includes subjective clinical judgment, while the PERC rule is meant for low-risk population. This study compares the performance of two objective tools: the Revised Geneva Score, widely used and fully objective, and the CHOD Score, a novel COVID-specific score incorporating C-reactive protein (CRP), heart rate, oxygen saturation, and D-dimer [2].

Methodology

A retrospective cross-sectional study was conducted at Pusat Perubatan Universiti Malaya (PPUM) from July 2022 to April 2023. Adult COVID-19 positive patients who underwent computed tomography pulmonary angiography (CTPA) were included. Clinical, demographic, and laboratory data were retrieved from electronic medical records. CHOD and revised Geneva scores were calculated for each patient. CTPA-confirmed PE served as the diagnostic reference standard.

Results

A total of 69 patients were included (mean age 66 years; 62.3% male), with PE confirmed in 23%. The CHOD Score demonstrated superior predictive performance with an area under the curve (AUC) of 0.782 (95% CI: 0.666–0.872), compared to 0.615 (95% CI: 0.490–0.730) for the Revised Geneva Score ($p = 0.015$). CHOD had high specificity (92.5%) but lower sensitivity (43.8%), whereas the Revised Geneva Score showed high sensitivity (93.8%) but low specificity (36.4%).



Discussion

The Revised Geneva Score may be less effective in predicting PE in COVID-19 due to the disease's unique features, such as in-situ thrombosis and hypercoagulability [1]. Alternatively, the CHOD score, incorporating CRP and oxygen saturation, may better reflect COVID-specific risk [2]. These findings suggest CHOD could be a more practical tool for guiding further testing like CTPA, especially in resource-limited settings.

Conclusion

The CHOD Score may offer a more accurate and practical method for predicting PE in COVID-19 patients. This highlights the need for predictive tools tailored specifically to COVID-19-related complications. Further multicenter validation and prospective studies are recommended before widespread clinical adoption.

References

- van Dam LF, Kroft LJM, van der Wal LI, Cannegieter SC, Eikenboom J, de Jonge E, Huisman MV, Klok FA. Clinical and computed tomography characteristics of COVID-19 associated acute pulmonary embolism: A different phenotype of thrombotic disease? *Thromb Res.* 2020 Sep;193:86-89. doi: 10.1016/j.thromres.2020.06.010. Epub 2020 Jun 6. PMID: 32531548; PMCID: PMC7274953.
- Garcia-Ortega, A, Oscullo, G, Calvillo, P, Lopez Reyes, R, Mendez, R, Gomez Olivas, J. D. & Bekki A. (2021). Incidence, risk factors, and thrombotic load of pulmonary embolism in patients hospitalized for COVID-19 infection. *Journal of Infection*, 82(2). <https://doi.org/10.1016/j.jinf.2021.01.003>

