

INTISARI

Latar Belakang : COVID-19 dengan tingkat penularan tinggi dan risiko keparahan yang dipengaruhi faktor usia, jenis kelamin, obesitas, serta komorbid, menuntut inovasi deteksi dini melalui RT-PCR, pencitraan medis, dan kecerdasan buatan (AI) seperti CAD4COVID-XRay yang dilengkapi sistem skoring untuk menilai severitas, sehingga dapat meningkatkan efektivitas penatalaksanaan pasien COVID-19.

Tujuan : Menilai akurasi sistem skoring CAD4COVID-XRay dalam memprediksi severitas pasien COVID-19 berdasarkan citra X-ray.

Metode : Penelitian ini menggunakan metode observasional dengan desain cross-sectional berbasis data retrospektif pasien COVID-19 di RSUP Dr. Sardjito. Penilaian skor CAD4COVID-XRay ditentukan dari hasil pemeriksaan klinis, radiografi dada, dan laboratorium pada rekam medis pasien. Analisis dilakukan melalui uji univariat untuk mendeskripsikan karakteristik data, kurva ROC untuk menilai sensitivitas, spesifisitas, dan akurasi melalui nilai AUC, serta regresi logistik multivariat untuk mengevaluasi hubungan skor CAD4COVID-XRay dengan faktor-faktor lain dan tingkat keparahan penyakit.

Hasil : Penelitian ini menunjukkan bahwa ALA score dari CAD4COVID-XRay memiliki akurasi lebih baik (AUC 0,679) dibandingkan Probability score (AUC 0,620) dalam memprediksi derajat severitas pasien COVID-19. ALA score juga signifikan bila dibandingkan dengan faktor klinis lain, dengan odds ratio 1,02 sehingga memberikan informasi tambahan penting dalam penilaian severitas. Beberapa faktor terbukti memiliki pengaruh yang bermakna terhadap tingkat keparahan penyakit, yaitu gejala batuk, gejala sesak napas, riwayat penyakit kardiovaskular, serta nilai Affected Lung Area (ALA) dari sistem CAD4COVID-Xray.

Kesimpulan : Berdasarkan hasil penelitian, ALA score terbukti sebagai prediktor derajat severitas pasien COVID-19 dan juga signifikan dibandingkan faktor klinis dan laboratorium lainnya.

Kata Kunci : COVID-19, Artificial Intelligence, Sistem Scoring, X-ray Dada, Data Klinis dan Laboratorium

ABSTRACT

Background: COVID-19, with its high transmission rate and severity risk influenced by factors such as age, gender, obesity, and comorbidities, demands innovation in early detection through RT-PCR, medical imaging, and artificial intelligence (AI) such as CAD4COVID-XRay, which is equipped with a scoring system to assess severity, thereby improving the effectiveness of COVID-19 patient management.

Objective: To evaluate the accuracy of the CAD4COVID-XRay scoring system in predicting the severity of COVID-19 patients based on X-ray images.

Methods: This study used an observational method with a cross-sectional design based on retrospective data from COVID-19 patients at Dr. Sardjito General Hospital. The CAD4COVID-XRay score was determined from clinical examination results, chest radiography, and laboratory tests in the patients' medical records. Analysis was conducted using univariate tests to describe data characteristics, ROC curves to assess sensitivity, specificity, and accuracy through AUC values, and multivariate logistic regression to evaluate the relationship between the CAD4COVID-XRay score and other factors and disease severity.

Results: This study demonstrates that the ALA score generated by CAD4COVID-XRay provides better accuracy (AUC 0.679) than the Probability score (AUC 0.620) in predicting the severity of COVID-19. The ALA score was also statistically significant compared to other clinical factors, with an odds ratio of 1.02, indicating that it offers important additional information in assessing disease severity. Several factors were found to significantly influence the severity level, including cough symptoms, dyspnea, a history of cardiovascular disease, and the Affected Lung Area (ALA) value produced by the CAD4COVID-XRay system.

Conclusion: Based on the study findings, the ALA score was shown to be a predictive indicator of COVID-19 severity and remained significant when compared with other clinical and laboratory factors.

Keywords: COVID-19, Artificial Intelligence, Scoring System, Chest X-ray, Clinical and Laboratory Data