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Diagnostic Accuracy of Rapid SARS-CoV-2 PCR compared to Reverse Transcription Polymerase Chain Reaction RT-PCR

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INTRODUCTION

Malaysia had reached five million COVID-19 cases as of May 2023. Perak alone recorded 238,369 cases with 2,141 deaths. Due to the capability of producing results within 1-2 hours, rapid SARS-CoV-2 PCR (rapid PCR) is used to hasten case detection, hence improving the diagnosis and management of COVID-19 patients.

OBJECTIVE

This study aims to determine the diagnostic accuracy of rapid PCR using reverse transcription polymerase chain reaction (RT-PCR) test as a reference standard.

GeneXpert – Xpert Xpress SARS-CoV 2

QIAstat – Dx Respiratory SARS-CoV-2

METHOD

112, 442 — *cases in Perak were reported through SIMKA (Jan-Dec 2021)

801 — cases requested for rapid PCR

130 — cases requested for rapid PCR paired with RT-PCR (excluding inconclusive result)

90 — final cases selected for data analysis

* the case selection was made regardless of the purpose of testing; critically ill patients, urgent transplant cases, brought-in-dead (BID) patients, or others upon consultation.

RESULTS

	Rapid PCR		RT-PCR	
	Detected	Not detected	Detected	Not detected
Inconclusive RT-PCR	4	28		
Inconclusive Rapid PCR			2	6

PPV **75.0%** 95%CI : 51.1-91.5

Phi coefficient **0.80** 95%CI : 0.52-0.91

Sensitivity **92.3%** 95%CI : 70.3-99.5

Accuracy **94.4%** 95%CI : 87.5-98.2

Specificity **94.8%** 95%CI : 88.3-98.4

Cohen's Kappa **0.79** 95%CI : 0.45-0.91

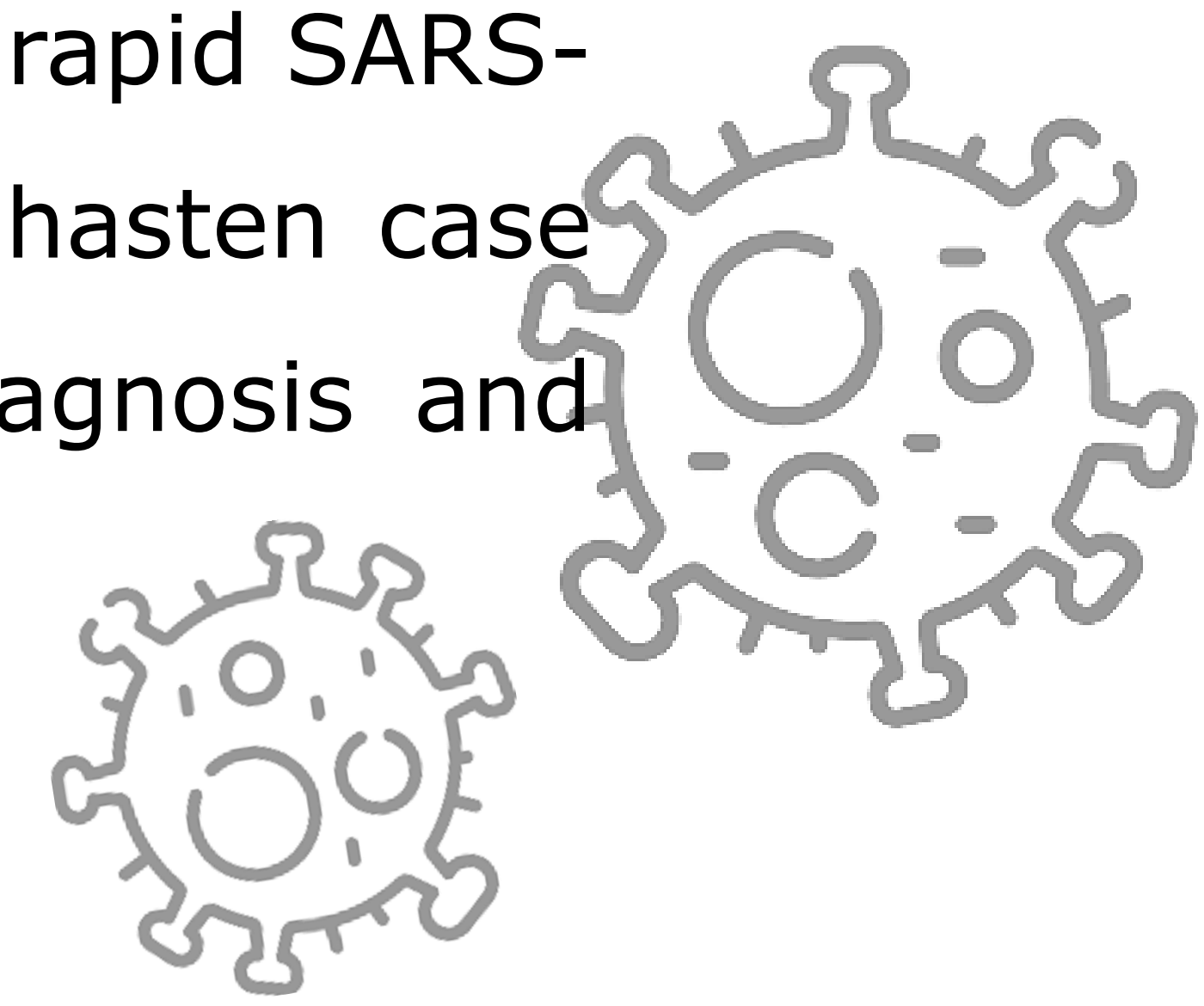NPV **98.6%** 95%CI : 94.2-99.9

CONCLUSION

This study demonstrates that rapid PCR performance is consistent with RT-PCR.

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