Hubungan nilai cycle threshold real time reverse transcription-polymerase chain reaction dengan tingkat keparahan klinis COVID-19 pada anak = Relationship of SARS-CoV-2 real time reverse transcription-polymerase chain reaction cycle threshold value with COVID-19 clinical severity in children

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Abstrak

Pada akhir tahun 2019 dilaporkan beberapa kasus pneumonia di Wuhan, Cina yang disebabkan oleh Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Penyakit yang ditimbulkan oleh virus ini disebut sebagai coronavirus disease 2019 (COVID-19). Jumlah kasus COVID-19 terus mengalami peningkatan dan penyebarannya terjadi pada seluruh kelompok usia termasuk anak-anak. Pemeriksaan real-time reverse transcription-polymerase chain reaction (rRT-PCR) telah diotorisasi oleh Food and Drug Administration (FDA) dan pada pemeriksaan ini dikenal istilah cycle threshold (Ct). Nilai Ct sering dijadikan acuan dalam menentukan tingkat keparahan penyakit pada anak, akan tetapi masih terdapat kontroversi apakah nilai Ct berhubungan dengan tingkat keparahan penyakit. Penelitian ini bermaksud mencari hubungan bermakna antara nilai Ct khususnya gen ORF1ab dan gen N dengan tingkat keparahan COVID-19 pada anak yang dibagi menjadi tingkat keparahan ringan dan sedang sampai kritis. Didapat 52 responden anak dalam penelitian ini, dengan 24 responden terdeteksi gen ORF1ab dan 49 responden terdeteksi gen N. Rerata nilai Ct gen ORF1ab kelompok ringan (33,5 ± 4,4) lebih tinggi dibandingkan dengan kelompok sedang sampai kritis (31,0 ± 6,0). Median nilai Ct gen N kelompok ringan (34,8 [21,3 – 39,4]) lebih tinggi dibandingkan dengan kelompok sedang sampai kritis (31,7 [19,4 – 38,9]). Tidak didapatkan hubungan bermakna baik antara nilai Ct gen ORF1ab (nilai p = 0,25) maupun gen N (nilai p = 0,159) dengan tingkat keparahan COVID-19 pada anak. Berdasarkan hasil penelitian ini, diperlukan berbagai pertimbangan dalam menginterpretasi nilai Ct.

.....At the end of 2019, several cases of pneumonia were reported in Wuhan, China caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The disease caused by this virus is known as Coronavirus Disease 2019 (COVID-19). The number of cases of COVID-19 continues to increase and its spread occurs in all age groups including children. Real-time reverse transcription-polymerase chain reaction (rRT-PCR) has been authorized by the Food and Drug Administration (FDA) and in this method a cycle threshold (Ct) value were obtained. The Ct value is often used as a reference in determining the clinical severity in children, but there is still controversy whether the Ct value is related to the clinical severity. This study intends to find a significant relationship between the Ct values, especially the ORF1ab gene and the N gene, with the COVID-19 clinical severity in children which is divided into mild and moderate to critical severity. There were 52 children in this study, with 24 children have ORF1ab gene detected and 49 children have N gene detected. The mean of ORF1ab gene Ct value in mild group (33.5 ± 4.4) was higher than moderate to critical group (31.0 ± 6.0). The median of N gene Ct value ââin mild group (34.8 [21.3 – 39.4]) was higher than moderate to critical group (31.7 [19.4 – 38.9]). There was no significant relationship between the Ct value of the ORF1ab gene (p value = 0.25) and the N gene (p value = 0.159) with COVID-19 clinical severity in children. Based on the results of this study, various considerations are

needed in interpreting the Ct value.