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## Hellenic Journal of Cardiology

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## Correspondence

## Dobutamine stress echocardiography during the COVID-19 pandemic in a tertiary hospital; effect on volume of tests and positivity rates

## Keywords:

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The emergence of coronavirus disease 2019 infection (COVID-19) was accompanied by severe social and economic restrictions and applied significant pressure to the healthcare systems. During the first wave, a remarkable decrease of cardiac imaging tests including dobutamine stress echocardiography (DSE) was documented worldwide.<sup>1,2</sup> Social restrictions were more relaxed during the second and third wave of the pandemic, but the burden for healthcare systems remained critical. Subsequently, healthcare professionals and patients adjusted to the new circumstances imposed by the pandemic, resulting in increased COVID-19 protection measures during cardiac imaging studies.<sup>3,4</sup> Initial data from the United Kingdom indicate that the delivery of stress echocardiography studies increased during the second wave, even exceeding the pre-COVID-19 levels at some echocardiography sites.<sup>2</sup>

The purpose of this retrospective study was to compare DSE volume and positivity rates during the first two years of the pandemic with the reference data from the 2019 year. Between 2019 and 2021, the monthly volume and positivity rates of DSE studies performed in a Tertiary University Hospital were recorded. A total of 3805 studies involving patients with moderate to high risk for ischemia were included in the analysis. Data were stratified according to the year, month and pandemic wave and were compared to the respective time period in 2019. The first pandemic wave was between April and May 2020, the second wave was between September and December 2020 and the third wave was from February to June 2021.

The volume of DSE studies is presented in absolute number, and the change to year 2019 is calculated as a percentage. Positivity rates represent the percentage of the total studies that were positive for ischemia. The change to 2019 is calculated as the absolute

difference in the percentage. The chi-squared test was used to test whether the difference in the percentage between 2019 and 2020 or 2021 was statistically significant.

The volume of DSE studies decreased from 1516 in 2019 to 996 in 2020 and increased to 1293 in 2021 (−34.3% and −14.7% with reference to the 2019 year, respectively). When DSE study volume was analysed on a monthly basis and the respective months of 2019 were used as reference, the reduction was greater in April (−93.7%) and May (−54.5%) 2020. A large decrease was also recorded in November 2020 (−46.8%) and December 2020 (−53.5%) when the second wave of COVID-19 disease emerged. The same pattern continued from January to May 2021 when the monthly decrease was 62.4%, 50.9%, 52.3%, 42.1% and 51.9%, respectively. Decrease during the third wave was higher (−43.1%) when compared to the second wave (−21.5%). Conversely, significant increase in DSE volume was evident between September and December 2021 (28.3%, 33.3%, 33.6% and 21.7%), possibly indicating a reversal of the trend observed during the first three pandemic waves (Fig. 1).

Regarding positivity rates, a statistically non-significant increase was recorded in 2020 (34.2% vs 33.6%,  $p = 0.73$ ), and a statistically significant decrease was documented in 2021 when compared to 2019 (26.5 vs 33.6,  $p < 0.001$ ). Interestingly, a statistically significant increase in positivity levels was recorded during the first pandemic wave compared to the same period of 2019 (44.7% vs 36.9%,  $p = 0.029$ ). In contrast, positivity rates were decreased at the second pandemic wave (27.1% vs 34.2%,  $p = 0.019$ ). Positivity rates during the third pandemic wave were lower, but the difference did not reach statistical significance (29.3% vs 33.4%,  $p = 0.17$ ) (Fig. 2).

In summary, the volume of DSE studies remained significantly reduced in the first three pandemic waves than in 2019. These changes possibly reflect a decreased hospital attendance of mildly symptomatic patients or patients with atypical symptoms and stricter admission criteria at the emergency department. Positivity rates were also lower in the same time period, probably indicating a preference for angiographic studies in high-risk patients with a view to decrease total hospital stay for patients evaluated for ischemia.

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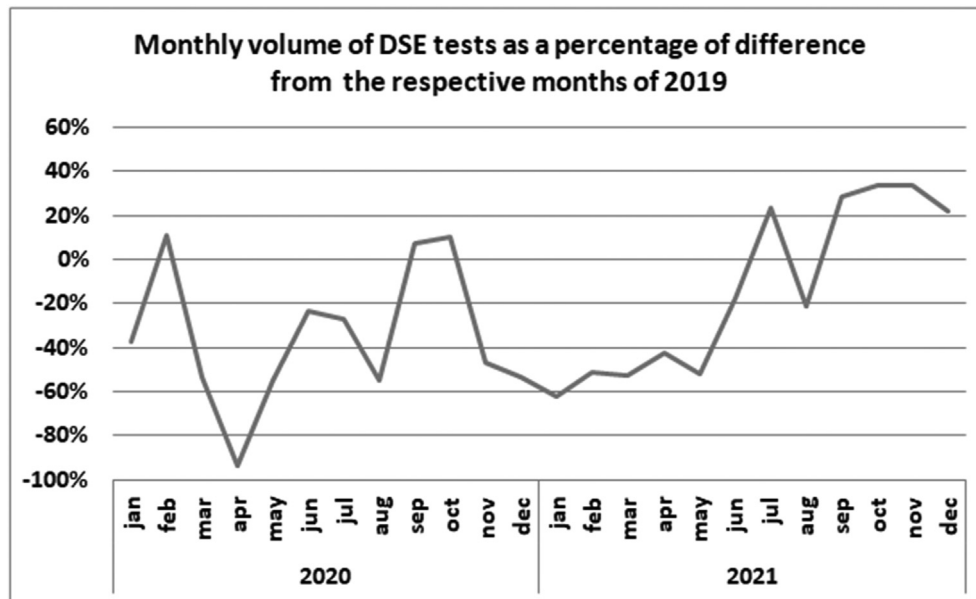


Figure 1. Monthly variation in the volume of DSE studies performed between 2020 and 2021 is presented as a percentage with reference to the respective months of 2019 year.

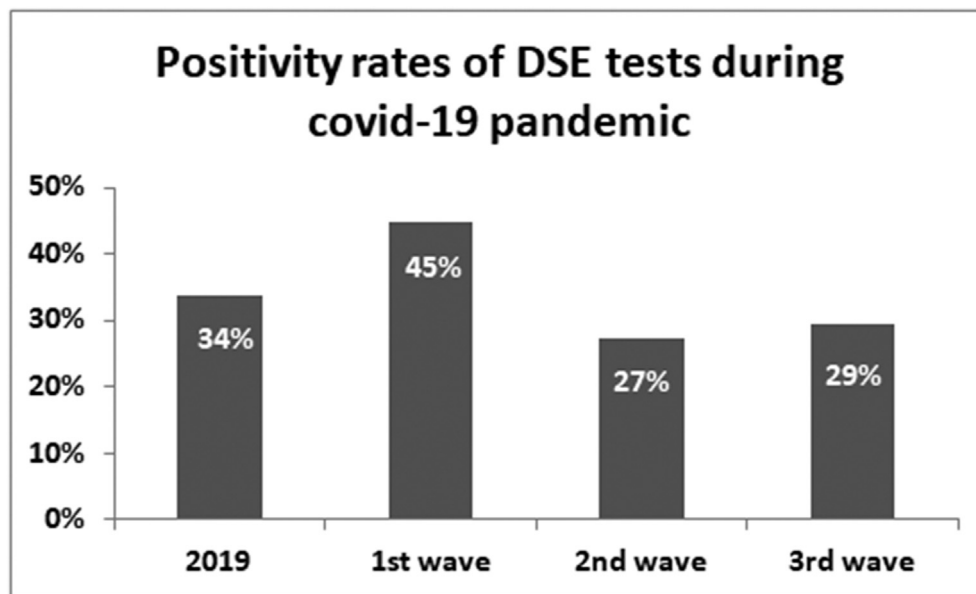


Figure 2. Positivity rates for the three pandemic waves are presented. Positivity rates for the 2019 year are also presented as a reference.

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### Conflicts of interest

The authors declare no conflicts of interest related to the manuscript.

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