

Characteristics of ST-elevation myocardial infarction in COVID-19 pandemic



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Background

The ongoing COVID-19 pandemic drives patients away from hospitals. Even patients suffering from ST-elevation myocardial infarction (STEMI) are reluctant to seek medical help, leading to a delay in reperfusion (1, 2). Low- to no-reflow phenomenon, high peak cardiac markers, major adverse cardiac events (MACE), reduced left ventricular ejection fraction, and higher one-year all-cause mortality may be the consequence (3).

Methods

This is a single centre prospective analysis of patients with STEMI who underwent primary percutaneous coronary intervention (pPCI) between December 15th 2020 and January 15th 2021. Data of these patients (n=26) are compared with STEMI patients (n=32) between December 15th 2019 and January 15th 2020. Cardiac markers, total ischemic time, treatment times, TIMI flow before and after intervention, thrombus characteristics, formation of collaterals and complications were recorded.

Results

- **Total ischemic time increased** by 192 minutes, +87%, $p = 0.020$ (Fig 1a)
- **Pain-to-FMC increased** by 60 minutes, +143%, $p = 0.039$ (Fig 2a)
- **Door-to-balloon time remained** 112 minutes, +19%, $p = 0.350$
- **Mean CK on admission was** 108 U/L higher than 2019/20, +86%, $p = 0.028$ (Fig 1b)
- **CK peaked on admission** in 69% vs 92% of patients, $p = 0.048$
- Aspirated thrombus was larger and more fibrotic (Fig 3)

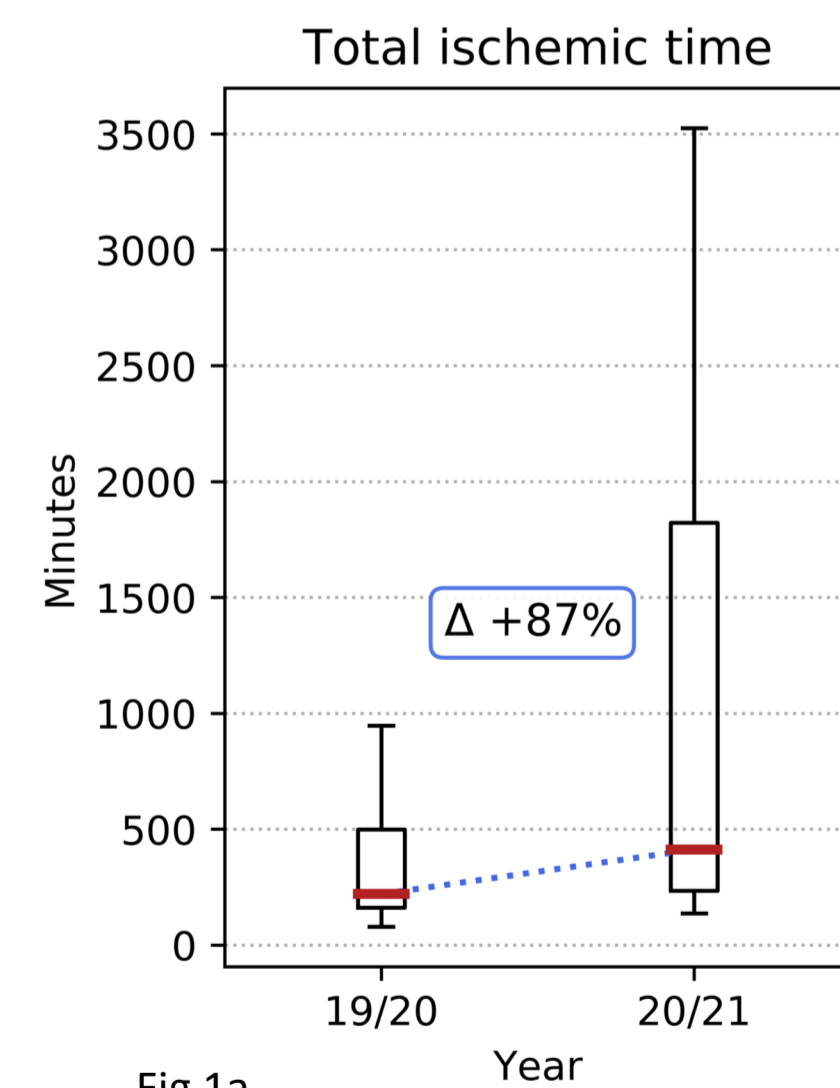


Fig 1a

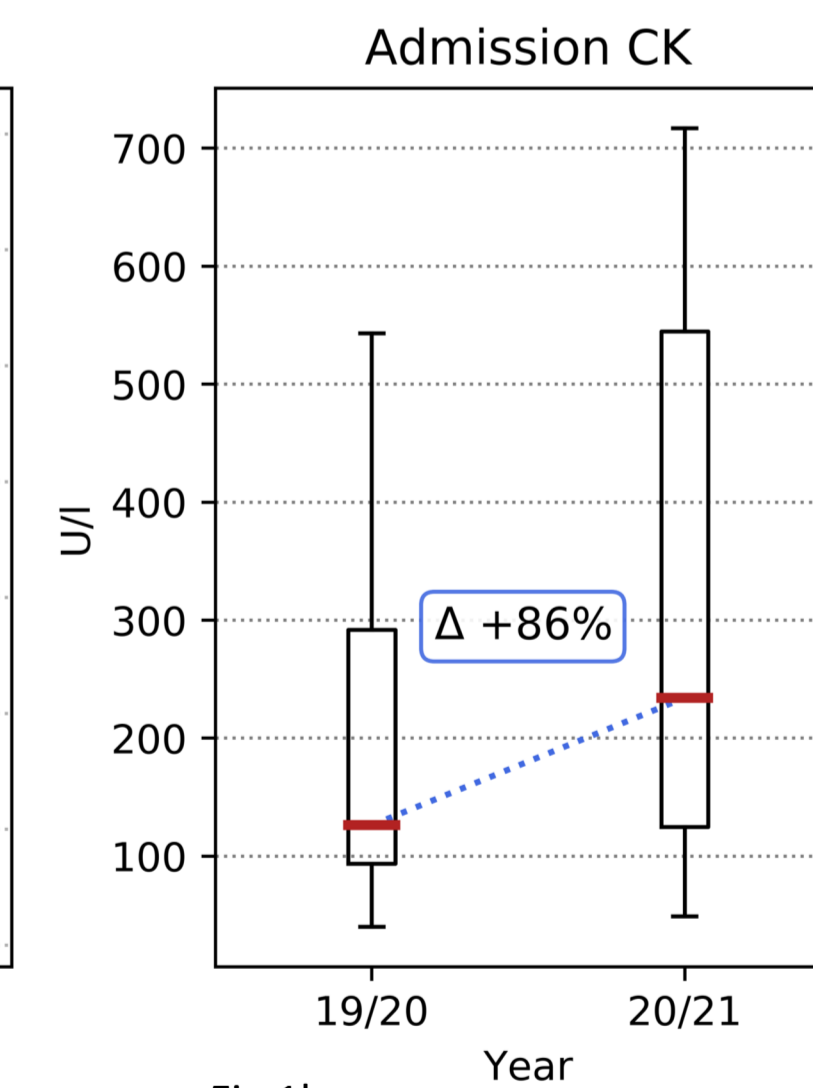


Fig 1b

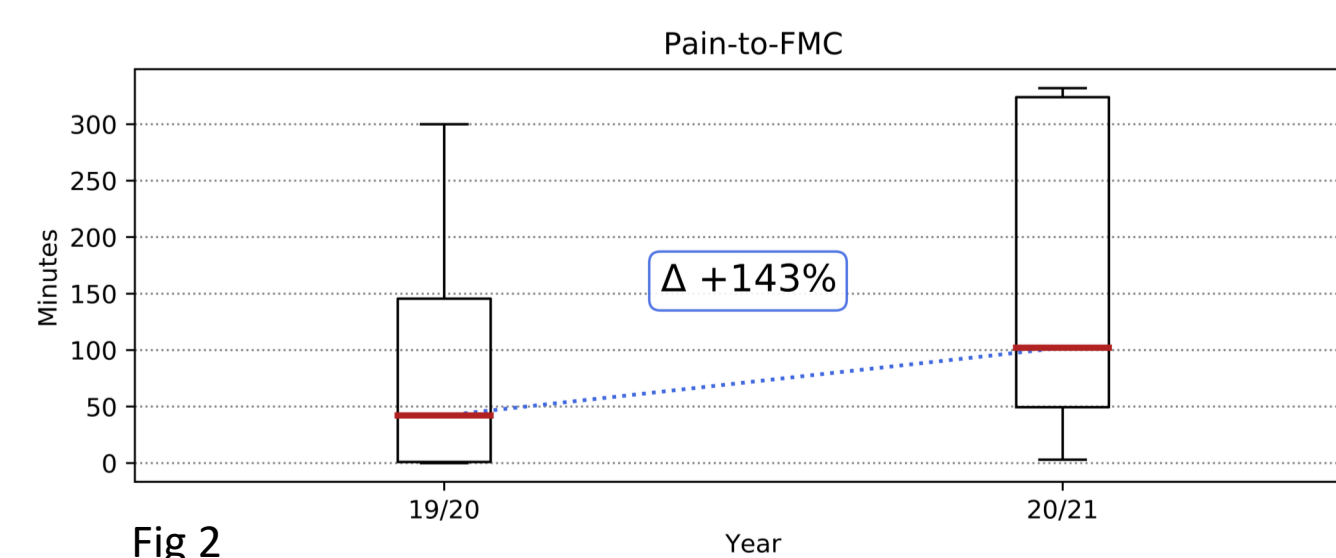


Fig 2



Fig 3

Discussion

Like in other European countries (1, 2) the total number of hospitalized STEMI was reduced in COVID-19 pandemic. Patient caused delay (Pain-to-FMC time) increased significantly. As a consequence of the ongoing pandemic the Door-to-balloon time increased due to SARS-CoV-2 testing at the hospital entrance. Nevertheless this increase was not statistically significant. Most patients had already reached their individual CK_{Max} on hospital admission.

Conclusion

Total ischemic time and the time from onset of pain to wire crossing increased significantly during the SARS-CoV-2 pandemic. Delay is predominantly patient delay. Myocardial biomarkers are decreasing after admission. There is a trend towards more collateralized occlusions on angiography, and frequent cases who present with occluded arteries and no ST-elevation.

References

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