IMJ Official Journal of the Irish Medical Organisation

Ir Med J; November-December 2024; Vol 117; No. 10; P1057
December 19th, 2024

An audit and quality improvement project of STEMI care in a model 3 hospital

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Dear Editor,

Timely reperfusion in the case of ST elevation myocardial infarction (STEMI) has been consistently shown to improve patient outcomes[1]. Chemical thrombolysis is the preferred reperfusion method for STEMI if primary percutaneous coronary intervention (PPCI) cannot be performed within 120 minutes[2,3]. European guidelines recommend thrombolysis administration within 10 minutes of first medical contact (FMC)[2]. Since the introduction of Ireland's Acute Coronary Syndrome (ACS) Programme in 2012, which prioritized PPCI, thrombolysis in STEMI has become less common.

However, recent audit data in the Dublin Mid Leinster (DML) region shows that median delays from FMC to reperfusion exceed 120 minutes for patients transferred from hospitals outside Dublin, prompting a reconsideration of thrombolysis for these patients[4]. Our study aimed to audit thrombolysis rates at the Midlands Regional Hospital Mullingar (MRHM) from 2017 to 2023, assess the time to administration, and evaluate knowledge and familiarity with thrombolysis among medical staff.

We analysed the thrombolysis rates and the time taken to administer thrombolysis in STEMI in MRHM from 2017 to 2023. Data were sourced from the National Heartbeat Portal and patient charts. A 9-question multiple-choice questionnaire was also administered to medical staff to assess their knowledge on thrombolysis indications and administration.

Our results indicated that thrombolysis was administered to 15 patients from 2017 to 2023, with an increase in administration in 2022 (5 patients) and 2023 (6 patients), compared to only 2 patients in 2020 and 2021, and none between 2017 and 2019. The median time from FMC to thrombolysis was 32 minutes. We received 26 responses to our questionnaire, from doctors in the medical department, including SHOs and registrars. Only 26.9% (7/26) correctly identified the current Irish guidelines for thrombolysis administration in STEMI. In terms of the practical aspects, 34.6% (9/26) correctly named Tenecteplase as the thrombolytic agent used in the hospital, 30.8% (8/26) were aware of the associated rate of intracranial

haemorrhage, and 50% (13/26) knew whether dual antiplatelets and heparin should be administered alongside thrombolysis.

The increase in thrombolysis rates reflects a change in practice in the DML region, but administration times still fall short of the European guideline of 10 minutes from FMC [2]. The questionnaire results highlight a general lack of familiarity with thrombolysis, likely due to its infrequent use since the ACS Programme's adoption in 2012, which may contribute to delayed administration.

To address these issues, a multidisciplinary quality improvement committee was formed to improve the overall standard of STEMI care in the hospital. This led to the development of a printed STEMI management protocol, developed with input from all major stakeholders, aimed at streamlining thrombolysis administration and improving the timeliness of STEMI management and transfer to PPCI centre. A data collection process was integrated to support future audits, and the findings were presented at hospital grand rounds. Staff training on thrombolysis indications and protocol was also provided. Moving forward, we plan to periodically re-audit this protocol to ensure timely thrombolysis administration in line with international guidelines.

Declarations of Conflict of Interest:
None declared.

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