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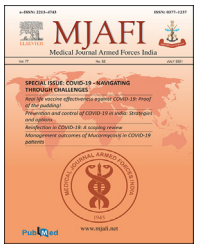

Correspondence/Letter to the Editor

Primary percutaneous coronary intervention during the COVID-19 pandemic: Recalibrate, restart and relearn

Dear Editor,

Corona virus disease 2019 (COVID-19) pandemic has shaken the foundations of all aspects of human life. During these difficult times, challenges in delivering optimal care to medical emergencies especially ST-segment elevation myocardial infarction (STEMI) have multiplied. The clinical outcome in STEMI depends upon various patient related factors coupled with timely diagnosis and management including primary percutaneous coronary intervention (PPCI). We decided to conduct a retrospective observational study assessing factors associated with STEMI undergoing PPCI during COVID-19 pandemic. We included all patients presenting with STEMI to emergency clinic who were eligible for PPCI. All eligible patients with STEMI underwent sampling for COVID-19 RT-PCR by Cepheid test at emergency room, which is a highly sensitive test and provides result in 45 min.[1] Without waiting for the result, all patients were shifted to cardiac cath lab (CCL). All PPCI were carried out in the one and only available CCL at the centre by dedicated trained staff using PPE (Personal Protective Equipment). All members of staff had been specifically trained for PPE donning and doffing measures. All members inside CCL wore goggles, face-shield, N 95 mask, gloves, suit, head cover and shoe cover along with radiation protective lead aprons. The primary operator used positive pressure hood respirator instead of N-95 mask in order to ensure adequate visibility of angiographic views during the procedure. Surface disinfection was done after every case followed by fumigation with Virkon.

During the period between 01 Aug 2020 till 31 Dec 2020, 26 patients underwent urgent coronary angiography for STEMI. 3 cases were done in Aug 2020, 5 cases were done in Oct 2020, 10 cases in Nov 2020 and 8 cases in Dec 2020. There were no obvious differences regarding clinical characteristics of these patients compared to non-COVID-19 period. The proportion of conventional risk factors was also on expected lines. 34.6% (n = 9) patients had diabetes and 26.9% (n = 7) patients had hypertension. 69.23% (n = 18) patients had presented with anterior wall myocardial infarction (AWMI) whereas 30.7% (n = 8) patients had inferior wall myocardial infarction (IWMI). 2 patients had presented with stent thrombosis and one patient had reversed saphenous vein graft (RSVG) graft occlusion. The average hospital length of stay was 3.76 ± 2.87 days. There was single in-hospital mortality out of these 26 cases.12 patients (46.15%) had single vessel involvement, 6 (23.07%) had double vessel involvement, 8 (30.76%) had triple vessel involvement. 80.76% (n = 21) patients underwent drug eluting stent placement; one patient underwent thrombus aspiration only, two underwent balloon dilatation only and two patients had spontaneous recanalized coronaries. All 26 patients (100%) had TIMI III flow in the infarct related artery at the end of the procedure. 11 patients underwent primary PCI via radial artery access alone. One patient was switched from radial access to femoral during primary PCI. 15 patients underwent procedure via femoral artery access. 3 patients even underwent PCI to non-infarct related vessel. The average number of stents placed per patient was 1.19 ± 0.87 with average stent length of 25.80 ± 19.29 mm per patient. The average fluoroscopy time was 18.30 ± 8.05 min and mean radiation dose was 1182.57 ± 462.36 mGy. The door to balloon (DTB) time was 69.76 ± 36.48 min. Our door to balloon (DTB) time during COVID-19 pandemic was comparable to study from India (72.0 ± 33.0 min) during non-COVID-19 time.[2] The usual DTB time at our centre during non-COVID-19 time is appx 40 min due to two important favourable factors. Firstly, all our CCL staff resides within the hospital campus and secondly being a government institute, all the procedure related expenses are covered by government; hence patient as well as relatives are relieved from financial burden of arranging finances. Thus; during COVID-19 pandemic our average DTB time has increased due to delay at various levels but still remains acceptable when compared to national average.

None of the patients had any history suggestive of COVID-19 or any positive contact history. Out of 21 patients only two patients ultimately tested to be COVID-19 positive by Cepheid test. One of those patients (3.84%) ultimately succumbed to multiorgan dysfunction along with respiratory failure despite appropriate management. There was nil COVID-19 infection in either cardiac CCL staff nor cardiac care unit during study period. It was necessary to sensitize all health care workers (HCW) regarding use of appropriate PPE as well as to expedite

the transfer of patient from emergency room to CCL. It is well known that ensuring adequate training in correct use of PPE can improve proper use of PPE by HCW[3] and results in marked decrease in risk of infection transmission. Hence institution mandated training sessions were conducted for HCW especially for those working in emergency room, CCL and cardiac ICU.

At our centre we were able to provide PPCI to all patients presenting with STEMI; if eligible. During first wave of COVID-19 pandemic most of hospitals; even PCI capable, could not offer PPCI to majority of patients due to various factors.[4] In our study DTB time of <90 min could be achieved in 80.76% of cases. In a study from China during the period between January to April 2020; out of eligible 164 patients presenting with STEMI, primary PCI was offered to only 14 patients with rest of the patients being managed by fibrinolysis, rescue PCI or elective PCI. In a single centre study from India from Mar–May 2020, 30 STEMI patients underwent PPCI with excellent outcomes.[5] We suggest that even during COVID-19 pandemic patients having STEMI who reach PCI-capable hospital within stipulated time needs to be managed by PPCI as per established protocols however; this would entail emphasis on training of HCW's regarding use of PPE as per standard instructions and simultaneously expediting various steps needed to perform PCI along with protocol-based cleaning of CCL after every procedure.

Disclosure of competing interest

The authors have none to declare.

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