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Routine chest radiography after primary PCI for AMI: is it still clinically necessary?

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THEME: Coronary Interventions
TOPIC(S): STEMI

AIMS

Aims: Chest radiographs (CXR) are a routine diagnostic modality widely used for the investigation of undiagnosed chest pain despite the known risks of radiation exposure. Based on historical data, in a large number of countries, CXRs are routinely performed in patients with acute myocardial infarction (AMI) treated with successful primary PCI, despite this confirmed diagnosis irrespective of the patients clinical well-being. We sought to determine CXR usage rates, diagnostic yields and prevalence of clinically significant abnormalities in AMI patients following primary PCI.

METHODS AND RESULTS

Method: Data was examined retrospectively on 728 STEMI patients treated with primary PCI at Barts Heart Centre between 2015-2016. Patient who were in cardiogenic shock, intubated or taken straight for CABG were excluded. We reviewed patients histories and request indications in concert with their CXR findings. The patients? state at the time of CXR was classified as being either ?well? or ?unwell?. ?Well? constitutes: no dyspnea, no tachypnea, no hypoxia, no cough, not intubated and no significant hypotension. Abnormal radiographs were stratified into significant and insignificant acute findings. Clinically significant findings included pneumothorax, pleural effusion, pneumonia, atelectasis and pulmonary oedema.Results: After applying the exclusion criteria to our data we were left with 658 patients. In total 548 patients (83%) had a CXR after PCI with 27% (149) performed out of hours (8pm-8am). 98% (538) of the CXRs were performed anteroposterior (AP), with 95% (523) further labeled as portable radiographs. Of these 403 patients (74%) who had a CXR were classified as ?well? at the time of the examination with the remaining having a documented clinical indication for CXR. Of those clinically indicated 66% (63) had an abnormal CXR. Of the 403 ?well? patients, there were 12 (14%) abnormal CXRs that were significant findings and changed clinical management. Notably, two of these patients benefitted from having the CXR as it picked up asymptomatic TB and pulmonary fibrosis. However seven patients (1.6%) had false negative diagnoses: 4 of these patients had subsequent PA radiographs to investigate abnormalities seen on AP which returned normal diagnoses, 2 patients had a CT chest to rule out malignancies, both of which returned as normal, and 1 patient had a false negative diagnosis which lead to a right hemithyroidectomy, after which histology reported the lesion as benign.

CONCLUSIONS

Conclusion: Routine chest radiography after primary PCI for STEMI provides little diagnostic or therapeutic advantage over clinically indicated chest radiography or simple clinical assessment. Therefore there is the potential to limit post-primary PCI CXRs to when there is clinical indication thus giving cost savings, reducing radiation exposures on the ward, freeing up staff and limiting the incidence of false negative diagnoses arising from poor quality portable AP films. However, this would come at the expense of missing a small minority of significant CXR abnormalities.