Percutaneous coronary interventions in West Yorkshire for the year 2002: an audit

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Abstract

Early invasive management in patients with unstable angina and non-ST elevation myocardial infarct (NSTEMI) is now well established. However, patients can wait for weeks at district general hospitals (DGHs) for in-patient transfer to the cardiac centre for percutaneous coronary intervention (PCI), which results in inefficient bed utilisation.

At the Yorkshire Heart Centre (YHC), the referral process for unstable angina/NSTEMI was streamlined to minimise the delay between time of referral and PCI. We audited the waiting time from referral to the PCI procedure as well as the six- and 12-month outcomes for both acute and elective PCI and compared our outcome data to the published trials.

A total of 1,757 patients underwent PCI at YHC in 2002; of these 47% were acute cases. 72% of patients were treated within two days of referral and 97% within three days. The mean waiting time for patients referred from within the YHC was 1.9 days and for those referred from the DGHs was 2.2 days. The six-month mortality rate for the acute PCI group was 2.5%.

Key words: audit, acute coronary syndromes, percutaneous coronary intervention, revascularisation, outcome.

Br J Cardiol (Acute Interv Cardiol) 2005;**12**:AIC 81–AIC 82

Introduction

Several large studies have demonstrated that an early invasive approach with a view to early revascularisation results in improved outcomes in patients with unstable angina/non-ST elevation myocardial infarction (NSTEMI).[1-3] In the UK, such a major change in clinical practice has put a considerable strain on a system that already had long waiting lists for coronary angiography, percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG). The resultant strategy, medical treatment followed by PCI some two to three weeks later, has no evidence base and the long waiting times, especially at the district general hospitals (DGHs), for in-patient transfer for PCI result in inefficient bed utilisation.

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Table 1. The six- and 12-month outcomes for the acute *vs.* elective subgroups

	Acute (n=776)		Elective (n=875)	
Follow-up period	6 months	12 months	6 months	12 months
Death	19 (2.5%)	24 (3.1%)	7 (0.8%)	11 (1.3%)
CABG	7 (0.9%)	19 (2.5%)	4 (0.5%)	16 (1.8%)
Repeat PCI	29 (2.5%)	44 (5.7%)	19 (2.2%)	50 (5.7%)

Key: : CABG = coronary artery bypass graft; PCI = percutaneous coronary intervention

Population and methods

The Yorkshire Heart Centre (YHC) is one of the largest interventional centres in the UK. It serves a 'district' population of 700,000 and a 'regional' population of 3.2 million. The regional population is also served by 11 DGHs, mostly with diagnostic angiography facilities. There are 15 PCI operators in the region, 11 of whom are based in the DGHs.

We streamlined the referral process for unstable angina/NSTEMI to minimise the delay between time of referral and PCI. To support the flow of patients in to and out of the YHC, a protocol to 'ring fence' beds both at the YHC and the DGHs was agreed and an experienced catheter lab sister was appointed as an intervention co-ordinator to be a single point of contact for all referrals into the YHC. The patients were referred by the DGH cardiology consultants or their specialist registrars and were discussed with the on-call consultant interventionist before being accepted.

Four PCI lists per week, each four hours long, were reserved for acute transfers; these were carried out by the YHC-based interventionists. All 11 visiting interventionists contributed to the acute service, each having one acute PCI 'slot' and two elective

slots in their PCI lists. In addition, a PCI list was usually scheduled for the on-call interventionist on Sundays.

We audited the waiting time from referral to the PCI procedure as well as the six- and 12-month outcomes for both acute and elective PCI between 1st January and 31st December, 2002. Survival of the patients and readmission to the YHC for further revascularisation was checked through the hospital patient administration database. This is regularly updated through the Office of National Statistics. If a patient could not be traced, the notes were traced and reviewed. We compared our outcome data to those from published trials.[1,2]

Results

In all, 1,757 patients underwent PCI at the YHC during 2002. In 106 patients the procedure was not completed for technical reasons. The 1,651 patients who had a completed PCI were followed up for one year. Of these, 1,198 (73%) were men, 875 (53%) were elective waiting-list cases (mean age 62.1±9.4 years) and 776 (47%) were acute cases (mean age 61.0±11.2 years). A total of 226 (14%) of the patients were diabetics, 132 (8%) had previously undergone CABG, 200 (12%) had previously undergone PCI and 709 (42.9%) had a past history of myocardial infarction. Some 1,185 (71.8%) had a single vessel treated, 433 (26.2%) had two vessels treated and 32 (1.9%) had three vessels treated. In total 1,284 (78%) of the patients received abciximab. The femoral route was used in 1,639 (99.3%) of the patients and a sealing device was used in 257 (15.6%) of the cases.

Of the patients admitted acutely (n=776), 194 (25%) came from the YHC and the remaining 582 (75%) were from the surrounding DGHs. Of the patients referred from the DGHs, 399 (68.6%) had undergone diagnostic coronary angiography and were transferred specifically for PCI. The remaining 183 (31.4%) were transferred for angiography plus/minus PCI and went on to PCI. A further 138 patients were transferred for angiography plus/minus PCI and were either referred for CABG or managed medically. Of the patients who were referred to the 'acute' service, 435 (56%) of their procedures were carried out by the visiting (DGH-based) interventionists. Some 661 (85.1%) of the acute patients received abciximab.

In all, 71.9% of patients were treated within two days of referral and 96.8% within three days. There were no major differences in waiting times between patients referred to the acute service from within the YHC (mean 1.9 days) and those referred from the DGHs (mean 2.2 days). By 12 months, 35 of 1,651 (2.1%) had died. The six- and 12-month outcomes for the acute *vs.* elective subgroups are shown in table 1. Overall, 93% of patients were free from death/CABG/repeat PCI at 12 months.

Discussion

We have demonstrated that it is possible to achieve timely revascularisation, at least by PCI, of acute coronary syndrome patients in a UK setting. Surgical revascularisation, in our centre, may still necessitate a two to four week in-patient wait. The evidence for benefit from revascularisation in unstable angina and NSTEMI is based on results from the FRISC II, TIMI 18 and RITA III studies,[1-3] in which revascularisation was performed early. In our service, with a large number of operators, the provision of early PCI can only be provided if there is effective and frequent hand-over of clinical responsibility. Thus, a patient may be admitted to a DGH under one consultant, undergo angiography at the DGH on the next available list under another consultant and undergo PCI at the regional centre on the next available list under a third consultant.

Our six-month and 12-month data show acceptable outcomes for both elective and acute intervention. Our six-month mortality rate for the acute PCI group was 2.5%. This is similar to the six-month mortality rate for the invasive group in FRISC II (1.9%)[1] and in TIMI 18 (3.3%).[2]

Key messages

- The shift towards an early invasive approach in patients with unstable angina and NSTEMI has resulted in long waiting times between admission and transfer to a cardiac centre
- A streamlined referral process to minimise the delay in transfer of patients is feasible and important as the evidence is for an early invasive approach
- Audits and national registries are useful tools in monitoring the change in clinical practice and outcomes

Acknowledgements

We would like to thank all the interventionists at the YHC: Drs J Perrins, M Sivananthan, A Mackintosh, P Batin, I Wilson, M Pye, R Crook, J Smylie, P Silverton, A Zezulka, S Grant, M Appleby and S Lindsay.

Conflict of interest

None declared.

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