Editorial

Treating coronaries, at home or away?

Direct angioplasty for acute myocardial infarction is either an unnecessary luxury or the greatest thing since sliced bread, depending on your persuasion.¹ It has been argued by proponents of thrombolysis that it is impractical to consider angioplasty in most instances because the majority of patients with acute infarction present to hospitals without the facilities to perform it. In this edition of *Heart*, Zijlstra *et al* challenge this premise.² They compared the outcome of 104 patients with acute infarction referred for direct angioplasty from peripheral hospitals, with 416 patients who presented to the tertiary institution. Despite the fact that the patients transferred were generally of higher risk, they did just as well as those who presented directly. Importantly, the overall ischaemic time was similar in both groups. Careful organisation meant that the time lost in transportation was made up by avoiding delays in vacating catheter laboratories.

There are obvious limitations to the study that the authors acknowledge. Essentially it was a non-randomised, retrospective audit, conducted in a demographically compact part of the Netherlands. For more than 90% of patients, the distance between the hospitals was less than 50 km. Restoration of coronary flow was achieved in 78% of the transferred group within six hours of the onset of pain. Thus the data may not apply to more rural parts of the world or to cities with worse traffic congestion.

Thrombolysis and angioplasty: comrades or competitors?

A considerable number of column inches has been devoted to the question of the optimal reperfusion strategy for acute infarction.³ As is the custom of the day, advocates use the same information gleaned from the few, small, randomised studies and non-randomised registries, and come up with diametrically opposing conclusions.¹ It is likely that the two techniques have similar efficacy, angioplasty perhaps being better but with added initial cost and inconvenience for the cardiologist.⁴ It is possible that the magnitude of the benefit is not as great as suggested by the original randomised studies.⁵ What is unfortunate is that the two main reperfusion strategies are portrayed as competitive. Their complementary potential is frequently ignored.

Which patients may benefit from access to direct angioplasty services?

Thrombolysis has been the mainstay of treatment for acute myocardial infarction for over 10 years. Thousands of patients have been randomised in trials and its benefits are beyond question.⁶ It is unlikely that there will be a major shift in favour of angioplasty in the near future. However, thrombolysis has limitations that might be addressed by angioplasty. The most serious limitation is the list of contraindications. Such is the monopoly of thrombolysis in many physicians' estimation that no other treatment is entertained. Up to 20% of patients presenting with acute myocardial infarction receive no reperfusion therapy at all and have a worse outcome.⁷ The data of Zijlstra *et al* should serve as a reminder that such patients could do well with angioplasty.²

There are other groups of patients presenting with myocardial infarction for which there is evidence that

thrombolysis may not be the treatment of choice. The GISSI-1 study was the only one of the large placebo controlled thrombolytic trials to include patients with unequivocal cardiogenic shock. There was no evidence of improved survival in this group.⁸ On the other hand, large case series have suggested an improved survival with angioplasty.⁹ In addition, the GUSTO-1 study patients with previous coronary artery bypass grafting did less well than those without a surgical history.¹⁰ Conventional intravenous doses of thrombolytic agents may be insufficient to deal with the thrombus burden in a saphenous vein graft. The same may apply to subacute stent thrombosis.

Angioplasty may have a role after thrombolytic failure. Thrombolysis is ineffective in achieving satisfactory (TIMI-3) reperfusion in 50% of circumstances.¹¹ The short and long term outcomes of those with persistent occlusion is much worse than if the artery is patent.¹² Although Zijlstra *et al* did not include patients in this group, "rescue" angioplasty after thrombolytic failure has been demonstrated to be of benefit, at least in those with anterior infarction.¹³ A logical role for angioplasty would be in a patient with persisting pain and ECG changes after thrombolytic therapy. In Zijlstra *et al*'s study² the mean time between presenting to the referring hospital and balloon inflation was around 90 minutes for patients who received treatment within six hours of pain onset. These short transfer times suggest that it may be profitable to explore the question of routine rescue angioplasty if thrombolysis has failed.

Access to direct angioplasty services

Transportation of patients with acute infarction is probably only feasible in geographically compact areas where transportation times are short. Modern ambulances can carry much of the necessary equipment and modern intra-aortic balloon pumps are easily portable and have a battery life of hours. With appropriate escorts, transferral of even very sick patients is possible. In the study by Zijlstra *et al* only one death occurred during transportation in a patient in cardiogenic shock.²

In geographically remote regions, it is unlikely that transportation is feasible. In such circumstances, there is a case for small volume, stand alone angioplasty units staffed by appropriately experienced personnel. A number of such units have published their experience and the results compare well with those from large volume centres.¹⁴⁻¹⁶ Crucial to the question of isolated units is the place of surgical back up. Although it is possible that angioplasty could destabilise the situation, it is unlikely. This is particularly so with the advent of flexible stents and better antiplatelet therapy. Therefore, surgery for angioplasty complications is not a prerequisite, particularly if this risk is offset against the risk of no reperfusion therapy.

Conclusion

Zijlstra *et al* end their discussion by calling for a randomised trial.² Many aspects concerning direct angioplasty require such studies. However, without the major sponsorship accorded to the thrombolytic megatrials, it is unlikely that a study of sufficient size and power will be conducted to convince thrombolysis devotees. However,

even the most monotherapeutic physician should remember that direct angioplasty has a place in infarct management. They should remain on good terms with their nearest angioplasty service (or develop one locally).

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