

## Letters to the Editor

doi:10.1053/euhj.2000.2377, available online at <http://www.idealibrary.com> on IDEAL®

### The risk of alcohol leakage into the left anterior descending coronary artery during non-surgical myocardial reduction in patients with obstructive hypertrophic cardiomyopathy

We read the paper by Rużyłło *et al.*<sup>[1]</sup> with great interest. It provides important information on the possibility of an anterior wall infarct due to closure of a left anterior descending coronary artery during non-surgical myocardial reduction in some patients with obstructive hypertrophic cardiomyopathy. Alcohol leaking from the occluded perforator after a relatively short (5 min) period of balloon occlusion was proposed as a potential reason for this complication. When the time of occlusion was prolonged to 10 min in a second series of their patients, non-surgical myocardial reduction was performed without such a complication.

The hypothesis of too short an occlusion time<sup>[1]</sup> seems very probable because the same complication occurred in two of 20 patients<sup>[2]</sup> and in one of 18 patients<sup>[3]</sup> and just in these two studies the balloon time was as short as 3 min<sup>[2]</sup> and 5 min<sup>[3]</sup>. Apart from the short-term balloon occlusion, it has been proposed<sup>[3,4]</sup> that if the balloon is positioned too proximally or if it is of inadequate size, alcohol may leak down the left anterior descending coronary artery. Additionally, Knight *et al.*<sup>[3]</sup> propose that chances of leakage are also increased if alcohol is injected a second time down the same septal branch, because the first injection will cause partial occlusion of the branch and increase impedance to forward flow. This hypothesis seems controversial because Rużyłło *et al.*<sup>[1]</sup> made a single injection of alcohol in all patients while we<sup>[5]</sup> safely injected a small amount (1 ml) of alcohol in three repeated boluses in our patient. Such alcohol administration in fractions of 1 ml has been recommended by Seggewiss<sup>[4]</sup>. Moreover, the slower rate of alcohol infusion beneficially

lowers the proportion of patients requiring DDD-pacing due to severe conduction disturbances<sup>[6]</sup>.

Alcohol leakage into a left anterior descending coronary artery occurred in a minority of patients in the cited studies<sup>[1–3]</sup>, which may suggest that apart from short-lasting balloon occlusion, an additional promoting factor is probably responsible for such a complication. The total systolic myocardial compression of the septal branch in some patients seems to be a plausible reason for alcohol leakage into the left anterior descending coronary artery. Thus, the systolic myocardial compression (resulting in alcohol retrograde wash-out) should be retrospectively and prospectively verified as a potential predictor of alcohol leakage. According to our observation<sup>[5]</sup>, prolonged (10 min) balloon occlusion protects against alcohol retrograde wash-out into the left anterior descending coronary artery, despite pre-procedural complete compression of the septal perforator, resulting in systolic retrograde flow even in the left anterior descending coronary artery. However, our patient was at risk of alcohol reflux to the left anterior descending artery by another mechanism<sup>[5]</sup>. In our patient, there were significant difficulties with correct balloon positioning in the first septal branch. After balloon catheter insertion into the septal branch, the balloon had an uncontrolled propensity to slip out to the left anterior descending coronary artery during each inflation attempt. Eventually, the delubricated balloon (to increase friction forces between the balloon and the vascular wall) safely occluded the septal branch.

The accumulating experience in non-surgical myocardial reduction should be helpful in avoiding pitfalls and optimizing procedures by establishing: time of occlusion, amount of injected alcohol, its infusion rate and predictors of alcohol retrograde leakage. Balloon occlusion prolonged to 10 min could be recommended as a standard procedure. The potential role of total compression of the septal branch for alcohol leakage should be verified.

P. P. DIMITROW  
D. DUDEK  
J. S. DUBEIL  
2nd Department of  
Cardiology CMUJ,  
Kraków, Poland

## References

- [1] Rużyłło W, Chojnowska L, Demkow M *et al.* Left ventricular outflow tract gradient decrease with non-surgical myocardial reduction improves exercise capacity in patients with hypertrophic obstructive cardiomyopathy. *Eur Heart J* 2000; 21: 770–7.
- [2] Kim JJ, Lee CW, Park SW *et al.* Improvement in exercise capacity and exercise blood pressure response after transcatheter alcohol ablation therapy of septal hypertrophy in hypertrophic cardiomyopathy. *Am J Cardiol* 1999; 83: 1220–3.
- [3] Knight Ch, Kurbaan AS, Seggewiss H *et al.* Nonsurgical septal reduction for hypertrophic obstructive cardiomyopathy: outcome in the first series of patients. *Circulation* 1997; 95: 2075–81.
- [4] Seggewiss H. Percutaneous transluminal septal myocardial ablation: a new treatment for hypertrophic obstructive cardiomyopathy. *Eur Heart J* 2000; 21: 704–7.
- [5] Dudek D, Gil R, Dimitrow PP *et al.* Balloon positioning difficulties during nonsurgical septal reduction therapy in patient with hypertrophic obstructive cardiomyopathy. *Catheter Cardiovasc Interv* 2000; 49: 314–7.
- [6] Lakkis NM, Nagueh SF, Kleiman NS *et al.* Echocardiography-guided ethanol septal reduction for hypertrophic obstructive cardiomyopathy. *Circulation* 1998; 98: 1750–5.

doi:10.1053/euhj.2000.2415, available online at <http://www.idealibrary.com> on IDEAL®

## A reply

The letter by Dimitrow *et al.* raises an important question concerning the risk of alcohol leakage into the left anterior descending artery during non-surgical reduction in patients with hypertrophic obstructive cardiomyopathy. This complication, which has also occurred in three of our first series of 12 patients, is usually the consequence of a technical mistake made during the procedure. To avoid it, we abide by the following rules:

1. Correct positioning of an adequately sized balloon in the target septal artery (the balloon must completely occlude the proximal part of the septal branch but should not protrude into the left anterior descending coronary artery (LAD));
2. Single injection of alcohol at a very slow rate (we only suspend it for 10 to 20 s whenever arrhythmia or conduction abnormalities occur);