Atherosclerotic renal artery disease and heart failure: questions in mind

Dear Sir,

We read with great interest the article by Kane et al. [1] recently published in the journal. As nephrologists, we are facing with a number of patients with renal artery stenosis in our daily practice. Predictors related to successful intervention for renal artery stenosis are not exactly known. Some studies showed that factors like renal resistive index measured by Doppler ultrasonography [2], renal vein plasma renin activity [3] and lesion type (ostial vs. non-ostial) [4] had an impact on the success rate of interventions for renal artery stenosis.

Although the authors showed that no apparent clinical benefit was observed with respect to mortality from revascularization of renal artery stenosis (RAS) when compared to medical therapy alone, the above-mentioned factors are not clearly elucidated. Whether the reduction of symptoms to medical therapy alone, the above-mentioned factors are not also mentioned.

We wonder whether the authors could give more information about these issues. We believe that these factors may be important determinants for the successful intervention for atherosclerotic renal artery stenosis.

Conflict of interest statement. None declared.

Baris Afsar
Zonguldak Ataturk Government Hospital,
Zonguldak Turkey
E-mail: afsarbrs@yahoo.com

Department of Nephrology,
Zonguldak Ataturk Government Hospital,
Zonguldak Turkey

doi: 10.1093/ndt/gfq236

Reply

Dear Sir,

We thank Drs Afsar and Elsurer for the interest in our work. They raise important questions regarding possible predictors of clinical outcomes following renal artery revascularization in patients with congestive heart failure and co-existent renal artery stenosis. Consistent with typical findings in atherosclerotic renal artery disease of haemodynamic significance, all patients in this study had either ostial or proximal (but not ostial) renal artery stenoses. Those who underwent renal artery revascularization had slightly higher rates of ostial 37/50 rather than medically managed (25/50) patients. The location of stenosis (ostial versus proximal) was not associated with age, sex, blood pressure, severity of heart failure or chronic kidney disease at diagnosis. Furthermore, outcomes with respect to blood pressure, heart failure and renal function tended to be similarly better in those who underwent renal artery intervention over medically managed patients whether the disease was ostial or proximal.

Data on renal resistivity index (RRI) was only available in a minority of patients and was not different between those who did or did not receive revascularization. Of those who underwent intervention, seven patients had RRIs <0.8 and four >0.8, and in those medically managed, 11 had RRIs <0.8 and 6 >0.8. The limited data did not allow the investigation of the association of RRI with outcome in this cohort. Data on renal vein renin sampling was not available.

Our study [1] not only provides evidence that renal artery revascularization resulted in improved heart failure control and a reduction in heart failure-related complications, but also identified future directions, including a need for a randomized control trial in which benefits of intervention in patients with heart failure would be studied in a prospective manner. This was discussed further in a comprehensive and elegant editorial provided by Kalra [2]. This future study should also address the role of clinical variables in predicting intervention outcomes in heart failure patients, including those that were discussed by Drs Afsar and Elsurer.

Conflict of interest statement. None declared.

Division of Cardiovascular Diseases, Mayo Clinic, MN
Garvan C. Kane
E-mail: kane.garvan@mayo.edu

Vesna D. Garovic
USA

doi: 10.1093/ndt/gfq241

The risk of sepsis from buttonhole needling must be appreciated

I read the article by van Loon et al. [1] with interest. This service has been using buttonhole needling of arteriovenous fistulae for the benefits described in the article. However, the risk of septicemia related to buttonhole needling should not be underappreciated when considering this needling method. I report the complications of infection in two cases undergoing buttonhole needling.
The first case was a 69-year-old male with diabetic kidney disease undergoing hospital haemodialysis thrice weekly. He presented with septicaemia due to *Staphylococcus aureus* and a septic embolus with abscess formation of the right lung. Transoesophageal echocardiogram was normal. Although there was no localized infection, the buttonhole sites were the only identifiable source of infection. He required 4 weeks of intravenous antibiotics and in-hospital care. The second case was a 75-year-old male undergoing home haemodialysis thrice weekly using buttonhole needling. His kidney disease was due to hypertension, and he also had diabetes. He presented with low back pain, and magnetic resonance imaging scans showed an L2/3 discitis, osteomyelitis of the vertebral body endplates and a small paravertebral abscess. Neither core biopsy of the disc nor blood cultures identified an organism. The patient responded to 4 weeks of intravenous fluclaxacillin.

Infection is a serious concern in dialysis patients, accounting for 17% of deaths in the UK Renal Registry [2] and 11% in the ANZDATA Registry [3]. Diabetes increases the risk of infection, and the rates of diabetes in incident patients in the UK, Australia and New Zealand were higher than the report by van Loon et al. (30.1%, 43% and 51%, respectively). With the increasing prevalence of diabetes among patients undertaking dialysis, the risk of infection from buttonhole needling may be higher than noted by van Loon et al.

Infection also causes significant morbidity. Hospital admission with *S. aureus* infection in a haemodialysis patient results in over 11 inpatient days and costs over US $19 000 [4].

Finally, the USRDS reports mortality in haemodialysis patients due to septicaemia from 2004 to 2006 of 21.6/1000 patient-years but only 0.7/1000 patient-years due to access failure [5].

The decision to undertake buttonhole needling of arteriovenous fistulae for the benefits of reduced aneurysm formation, haematomas and angioplasty must be carefully considered with the risk of infection and associated morbidity and mortality.

Conflict of interest statement. None declared.

Nicholas Gray
Department of Renal Medicine, Nambour General Hospital, Nambour, QLD, Australia
E-mail: nicholas_gray@health.qld.gov.au


doi: 10.1093/ndt/gfq255

Advance Access publication 12 May 2010

Reply

We thank Dr Gray for the commentary on our article concerning the use of buttonhole technique to cannulate dialysis fistulae. We acknowledge the fact that infection and sepsis are leading causes for morbidity and mortality in dialysis patients, and infected buttonholes may attribute to this complication. However, infection is a leading complication, in particular, in patients with grafts and central vein catheters for dialysis [1–3]. And this is just the reason to perform fistulae instead of grafts and catheters. We appreciate that, nowadays, upper arm fistulae with short cannulation vein segments are increasingly created in an old diseased patient population with inability to have long vein segments as seen in forearm fistulae. This feature has led to a resurrection of the buttonhole technique which may be more suitable for short cannulation segments, in particular, in upper arm fistulae, but this technique may have an inherent infection risk.

In most dialysis facilities, renewed experience and learning in using buttonhole technique may be needed and the process may be initially associated with more complications. Therefore, training of dialysis nurses using a meticulous aseptic technique according to a strict cannulation protocol may help to prevent this complication.

The decision to undertake buttonhole needling of arteriovenous fistulae has been made, in particular, to enhance cannulation and to reduce miscannulation and cannulation-associated complications in difficult vascular access [4]. We are well aware that this technique may bear a risk of infection, and caution should be undertaken to recognize this dreadful complication in an early stage so that adequate treatment can be initiated.

Conflict of interest statement. None declared.

Magda M. van Loon
E-mail: vas.access@tip.nl

Jan H.M. Tordoir


doi: 10.1093/ndt/gfq257