malposition of a catheter represent acute complications of central venous access devices [1,2]. Therefore, right atrial electrocardiography was introduced by Wilson and Gaer for proper placement of central venous lines [3]. Recently, Dionisio et al. and Galli et al. reported on the applicability of this technique for safe placement of haemodialysis catheters [4,5]. In order to find out whether overinsertion of guide wires (advancing the guide wire into the right heart to provoke dysrhythmia) is a safe procedure to assure correct catheter placement, guide-wire-associated complications of percutaneous insertion of central venous catheters were evaluated at the acute dialysis unit of the University Hospital of Vienna.

The insertion of 1527 central venous catheters was evaluated with respect to malposition and symptomatic arrhythmia during an observation period of 3 years. Double-lumen dialysis catheters, Dacron-cuffed permanent dialysis catheters, Hickman catheters, implantable port systems, and infusion catheters were implanted for the care of renal failure and cancer patients. Catheters were placed by staff and rotating physicians using Seldinger’s technique and thoracal electrocardiogram monitoring. Application of fluoroscopic technique or ultrasound guided puncture was limited to patients with venous stenosis or thrombosis due to previous catheters. Following venous puncture the guidewire was over-inserted into the right heart, indicating proper placement along the superior vena cava. Once dysrhythmia was registered, the guidewire was relocated into the superior vena cava and the sheath and/or the catheter (< 20 cm length) was introduced.

In our patients no haemodynamic relevant dysrhythmia necessitating other therapeutic interventions than reposi-
tioning of the guide wire (asymptomatic dysrhythmia was seen in about 50% of our patients) was observed. In a recent study atrial arrhythmias and ventricular ectopy occurred with a frequency of 41 and 25% respectively. Similar to our study, no malignant arrhythmia was observed [6]. This is in contrast to the data of McDowell et al. who described symptomatic ventricular tachycardia in 1% (2/200) of haemodialysis patients [7] and Brothers et al. who described a complication rate of 0.9% (3/329) in cancer patients [8].

Following puncture of the right subclavian vein eight catheters were misplaced into the right jugular vein and seven catheters into the left subclavian vein. Two catheters were misplaced into other vessels. Five catheters introduced via the right jugular vein were all misplaced into the right subclavian vein. Of two catheters inserted via the left jugular vein, one was introduced into the right jugular vein and the other, even though using fluoroscopic technique, was repeat-
edly located in the left subclavian or the right jugular vein.

One catheter inserted via the left subclavian vein was located in the left jugular vein. Thus the application of this technique resulted in a very low malposition rate of 1.64% (25/1527) compared to 4.2% (15/355) in other studies [9].

We therefore conclude that overinsertion of guidewires, monitored by transthoracic electrocardiography, represents a useful and safe technique to assure proper placement of central venous access devices in chronic renal failure and cancer patients.

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Interferon-alpha treatment of haemodialysis patients with chronic viral hepatitis and its impact on kidney transplantation

Sirs,

In a recent issue of a journal [1], there was an interesting paper on interferon (INF)-alpha therapy in haemodialysis patients with chronic viral hepatitis. It was stated in the abstract that ‘interferon-alpha has not been used previously in haemodialysis patients with chronic hepatitis’. Therefore, I am very pleased to give more information about INF therapy on our haemodialysis patients with chronic hepatitis C virus (HCV) infection [2].

Forty-five adult patients with chronic HCV infection who had elevated transaminases and histologically proven chronic hepatitis were treated with interferon-alpha (Roferon, Roche) 3 million units three times a week s.c. for 6 months. All patients had evidence of HCV infection with HCV RNA (polymerase chain reaction) and antibody to HCV in serum (by second generation ELISA). Seventeen of the 45 patients had chronic renal failure (CRF).

Fifteen of 17 haemodialysis patients with chronic HCV infection (38%) and 14 patients of 28 patients without CRF (50%) had a complete biochemical response (normalization of serum ALT levels) at the end of the 6th month of therapy. The rate of complete response was higher in haemodialysis patients compared those with normal renal function (P < 0.05). Five haemodialysis patients and eight patients with normal renal function showed histological improvement in control liver biopsy after interferon therapy. The administration of INF was not associated with any severe complications. Five haemodialysis patients and seven patients without chronic renal failure showed increase in serum ALT level at 3 months after INF therapy.

Four patients with CRF had renal transplantation after another 6 months follow up, with normal serum ALT levels. Three patients received kidneys from first-degree relatives and one from a cadaver. One patient underwent liver biopsy 6 months after kidney transplantation, and liver histology showed no differences compared to previous pre- and post-treatment biopsies. The renal recipients were followed for
Prospective study of percutaneous jugular vein catheters for long term haemodialysis catheters

Sir,

We found the papers published in your Journal on permanent haemodialysis central venous catheters [1–4] valuable. We have been interested in complications associated with permanent haemodialysis catheters in our unit and collected data from January 1992 to July 1994 in our renal unit in a District General Hospital, with a catchment area of 200 000 population and a take-on rate of 20 new patients with end-stage renal failure for renal replacement therapy (100 new patients per million population per year). Fifty per cent of these patients present as uraemic emergencies requiring dialysis within 24–48 h of admission and the other 50% have failure of function of their dialysis access.

We would like to report our experience with a single lumen silicone catheter with one cuff (Kimal UK, Limited). The jugular route was chosen due to the lower rate of complications [2] associated with it.

All catheters were inserted percutaneously using the Seldinger technique under fluoroscopy and sedation with Midazolam. The catheter introducer was the peel away sheath FG16 (Kimal UK, Limited). Forty-three catheters were inserted in the right internal jugular veins and one in the external jugular vein. There were 16 males and 17 females aged between 32 and 81 years.

Complications were as follows:
1. Respiratory arrest occurred in one patient following 3 mg of intravenous Midazolam requiring endotracheal intubation and ventilation, until the effect was reversed with slow bolus injection of 300 mcg Flumazenil.
2. One patient bled from the exit site and required exploration of the catheter tunnel. An arterial bleeding point was found and tied off and the catheter was retunneled to another point on the anterior chest wall.
3. Fourteen episodes of exit site infections occurred in nine patients (27.2%), eight of these infections (57%) in four patients with diabetes mellitus, patients with diabetes made 12% of the total study of population. Nine episodes were due to Staphylococcus aureus, two Staphylococcus epidermidis, one Proteus, and two were culture negative but due to production of purulent discharge these were considered as exit site infections. All exit site infections were treated with a combination of Flucloxacillin and Rifampicin, the combination of which has been successful in the treatment of exit site infections related to Tenckhoff catheters for continuous ambulatory peritoneal dialysis [5]. We eradicated all the infections except two. These two catheters were removed and the infections eventually settled without recurrence.
4. Thirteen events of poor blood flow occurred in 10 patients (22.7%), the blood flow was persistently less than 150 ml per min during dialysis. Catheter cannulograms were performed in these patients, but no lumen obstruction was demonstrated. It is known that hypovolaemia may produce poor blood flow in central venous catheters and therefore central venous pressure was measured in all the patients with poor blood flow. In three patients the pressures were low and hypovolaemia was corrected with intravenous saline, which was followed by improved blood flow. In eight patients central venous pressures were normal and their catheters were subsequently removed, however on inspection no fault was found with the catheter to account for the poor blood flow and it was assumed that the catheter tip was probably touching the vessel wall during the outflow phase of dialysis. New catheters were inserted in these patients into the left internal jugular veins whilst waiting for their fistulae to mature.

 Altogether 10 catheters (22.7%) were removed due to complications. The catheter survival at 3 months was 72.7%, at 6 months 50%, 12 months 38.6% and 30 months 36.4%. Eight patients died (24.2%) of catheter unrelated causes but with functioning catheters at the time of death.

We would like to reduce (i) the exit site infection rate further and have started treating nasal carriers of Staphylococcus aureus with Mupirocin ointment as recommended elsewhere [6], (ii) reduce problems with blood flow by using catheters with distal holes as advised by Meester et al. [1]. To improve first pass successful venous cannulation, we are going to use ultrasonic guidance which should reduce peri...