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ABSTRACTS OF COMMUNICATIONS

A Scientific Meeting was held at the Clarendon Suites, Birmingham on Tuesday–Thursday, 6–8 December 1994, when the following paper was presented. This abstract arrived too late for inclusion in Volume 54 no. 2.

All abstracts are prepared as camera-ready material by the authors.

A prospective evaluation of central venous blood flow using Doppler ultrasound in patients with long-term central venous catheters. By N WILLIAMS, A BRADLEY, D LEINHARDT, H MAMTORA and M.H. IRVING. *Nutrition Unit, Hope Hospital, Salford, M6 8HD*

The presence of an intravascular foreign body is thought to affect normal blood flow and may predispose to intravascular thrombosis. This may present clinically as catheter occlusion or with symptoms and signs of major vessel thrombosis (Cassidy et al. 1987). To study the relationship between blood flow characteristics and the development of intravascular/pericatheter thrombosis we assessed central venous blood flow prospectively using Doppler ultrasound in a group of patients requiring long term central venous catheterisation for home parenteral nutrition.

Ten patients (6M, 4F, median age- 49 (range 16-59) years) were studied. Underlying diagnoses were; Crohn's disease 6, short bowel syndrome 3, radiation bowel 1. A cuffed polyurethane catheter was used and was placed in the subclavian (4), cephalic (3) or jugular (3) vein. Duplex venography was performed at 2 monthly. Forty-seven examinations were performed (median- five per patient) with a median follow-up of 12 months (range 6-18). At 6 months following catheter insertion there was no evidence of intravascular thrombus in any patient. Normal, laminar flow was noted on twenty four occasions and on five occasions, central venous flow around the catheter was turbulent or abnormal. Between 6-12 months after catheter insertion, normal blood flow was documented in all of nine examinations. At 12 months and onwards following catheter insertion, normal blood flow was found in five examinations and turbulent flow in four. In two patients the initial assessment found turbulent blood flow and both had further documented turbulent blood flow (at 4 and 6 months respectively) following CVC placement and both were subsequently found to have developed intravascular thrombus. Of the eight patients who had normal blood flow initially following CVC placement, two were subsequently found to have intravascular thrombus although all continued to demonstrate normal blood flow throughout the period of the study.

Catheter-related thrombosis has been radiologically demonstrated to be present in up to 50% of patients with long term central venous catheters (Ladefoged et al. 1981). However, the aetiology of this development remains unclear. Colour Doppler imaging has been demonstrated to be both sensitive and specific in identifying venous thrombus (Knudson et al. 1990). Two unique and surprising findings emerge from this study. Firstly, the presence of an intravascular foreign body does not significantly alter blood flow characteristics in the upper body veins, even after a prolonged period (a maximum of 18 months in this study). Secondly, turbulent blood alone was not unique in predicting the formation of intravascular thrombus as thrombi developed despite normal blood flow in two patients.

Cassidy FP Jr, Zajko AB, Bron KM. *American Journal of Roentgenology* (1987) **149** 671-675

Knudson GJ, Weidmeyer DA, Erickson SJ, Foley WD, Lawson TL, Mewissen MW, Lipchik EO.

American Journal of Roentgenology (1990) **154** 399-403

Ladefoged K, Efsen F, Krogh Christofferson J, Jarnum S. *Scandinavian Journal of Gastroenterology* (1981) **16** 913-919