Abstract:

BACKGROUND: Intravenous antibiotics are the cornerstone of treatment for patients with cystic fibrosis (CF). Midlines are a type of vascular access device (VAD) used exclusively in one treatment facility within Australia, most other centres use peripherally inserted central catheters (PICCs).

OBJECTIVE: To ascertain the safety and efficacy of midlines for CF patients receiving intravenous antibiotics.

DESIGN: Retrospective observational.

SETTING: A large, major metropolitan teaching hospital in Adelaide, South Australia.

PARTICIPANTS: Adult patients with a diagnosis of CF, who had a PICC or midline inserted for the commencement of antibiotic therapy during the period 2004-2010 to treat a respiratory exacerbation.
METHODS: Medical records and hospital reports were used to record rates of adverse events and unexpected removal of VADs. The primary outcome was a composite measure of adverse events (catheter-related blood stream infection, deep vein thrombosis, occlusion, pain, infiltration, bleeding, phlebitis, catheter leakage and dislodgement) and whether the VAD was removed unexpectedly.

RESULTS: There were 231 midlines and 97 PICCs inserted into 64 patients (39 male and 25 female; age range 18-47 years old). Presented as per 1000 VAD days, patients with PICCs and midlines had similar rates of adverse events (14 and 11 adverse events per 1000 VAD days, respectively). Unexpected removal was higher for patients with midlines (6.90 per 1000 VAD days) than for PICCs (2.89 per 1000 VAD days). Incident rate ratios (IRRs) showed that patients with midlines and PICCs had similar rates of adverse events (IRR 1.18, P=0.617, CI 0.62-2.22) although the removal rate of patients with midlines was twice that of patients with PICCs (IRR 2.24, P=0.079, CI 0.91-5.56). As an absolute risk there were only 4.09 more cases of removal for patients with midlines per 1000 VAD days than those with PICCs.

CONCLUSIONS: Midlines may be an alternative to PICCs for adult CF patients although further research is required with a larger sample size to enable definitive conclusions.