EFFECT OF ANESTHETIC TECHNIQUE ON MORBIDITY AND MORTALITY IN ARTERIOVENOUS FISTULA CREATION

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Introduction. Patients requiring creation of an arteriovenous (AV) fistula for long term dialysis access have a high incidence of cardiovascular risk factors. They also have a high incidence of risk factors for adverse outcome of regional anesthesia, including platelet dysfunction, neuropathy, and immunosuppression. However, the morbidity and mortality of AV fistula creation, and the effect of anesthetic technique on outcome, have not been previously reported.

Methods. All patients (N=469) having an AV fistula placed at the authors’ institution between 1986 and 1991 were retrospectively studied. Associations of preoperative factors, outcomes, and anesthetic technique were analyzed by analysis of variance for age, and by exact conditional frequency table analysis for all other factors.

Results. Preoperative variables analyzed were age (mean 63 ± 14 yr), sex (60% male), diabetes mellitus (26% incidence), hypertension (92%), the presence of a previous AV fistula (31%), coronary artery disease (86%), and previous myocardial infarction (MI) (42%). Outcome variables studied were fistula failure prior to first attempted dialysis (8.7% incidence), infection (3.4%), neuropathy (1.9%), seizure (0.2%), nonfatal cardiac event (MI or arrest) (1.5%), and fatal cardiac event (2.1%). A previous AV fistula was associated with infection (p<0.002) and nonfatal cardiac events (p<0.003). Increased age (p<0.025) and previous MI (p<0.01) were associated with adverse cardiac outcomes. No other preoperative factors were associated with any adverse outcome. Neither local anesthesia (54% of cases), brachial plexus block (33%), nor general anesthesia (13%) were significantly associated with an increased frequency of any adverse outcome.

Discussion. This study confirms and quantifies the clinical impression that patients presenting for AV fistula creation have a clinically acceptable but still substantial morbidity and mortality from the procedure. Despite the presence of risk factors for bleeding, infection, and neuropathy in uremic patients, regional anesthesia was not associated with an increased risk of these or any other adverse outcome studied. These findings suggest that considerations that are minor in relation to final outcome, but more important in regard to patient satisfaction (e.g., postoperative nausea, speed of recovery, lack of awareness) can be considered in formulating an individual anesthetic plan without adversely affecting major morbidity and mortality. (Supported by a grant from the Mayo Foundation Research Committee.)