

Generally speaking, the Pump Technologist and the Dialysis Technician, even though in a closely related field, seldom have the opportunity to work together for a single purpose. The following article, based upon personal experience, illustrates not only the possibilities of the joining of forces for a common purpose, but a method of treatment not discussed prior to now. That being the hemodialysis of a patient in acute renal failure while on cardio-pulmonary bypass.

A thirty-one year old white male was admitted to the hospital for evaluation of congenital heart disease. A heart murmur had been present since the age of one month. He had been relatively asymptomatic until seven years ago and noted progressive fatigability. He was started on digitalis at that time and responded initially.

History and physical revealed peptic ulcer disease without GI bleeding and hematuria four years ago. All laboratory values were within normal range on admission.

Cardiac fluoroscopy revealed cardiomegaly with biventricular and left atrial enlargement, central pulmonary congestion compatible with ventricular septal defect and mitral incompetence was suspected. A ventriculogram revealed a high ventricular septal defect.

Four days following the routine evaluation, the patient underwent closure of the ventricular septal defect using a Dacron patch under total cardio-pulmonary bypass; total pump time 54 minutes and insertion of Electrodyne pacemaker. He did well the first post-operative day. Three days post-operative he became hypotensive, disoriented and psychotic, progressively worsened and suffered cardiac arrest with ventricular fibrillation. He was resuscitated after approximately twenty minutes of external massage, gradually awakened, but had several grand mal seizures. He remained hypotensive, requiring vasopressors and became anuric.

The patient was at this time X-rayed and immediately following this, developed ventricular fibrillation and was returned to the operating room for exploration. The patient's serum potassium was measured and reported to be 11 mEq. per l. (normal 4 to 6).

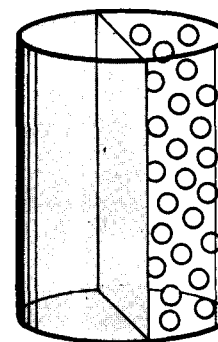
Dialysis

It was at this time that I received the emergency call, at 4:00 a.m., to prepare to dialyze the patient during Dacron graft resuturing while on total cardio-pulmonary bypass. We connected the arterial line of the kidney to the patient's right femoral artery and the venous return line from the artificial kidney to the pump of the oxygenator, thereby insuring that all blood entering the cardio-pulmonary bypass and being returned to the patient was dialyzed blood. We dialyzed against a "O" gradient of potassium.

Within fifteen minutes, marked changes were noted on the EKG monitor. The T-wave gradually began to fall. Spontaneous cardiac rhythm developed. Serum potassium fell to 9.0 mEq. per l., 8.5 mEq per l., 7.2 mEq per l., 6.9 mEq per l., and 6.3 mEq per l. respectively.

After a period of hemodialysis a rather good cardiac action was restored, however, requiring large dosage of vasopressors and partial cardio-pulmonary bypass of approximately 2,000 c.c. per minute to maintain cardiac action. All attempts to maintain these cardiac actions by cardio-pulmonary bypass were unsuccessful. The patient eventually became unresponsive to any therapy and expired on the operating table after five hours and thirty-nine minutes total pump time.

Even though the patient was not saved, for the first time the pump team and the dialysis team joined hands in a joint venture without precedents or guidelines to follow. They embarked on a new horizon in medicine and proved that together they could provide opportunities for life that had not been allowed before. A new perspective is now open for the patient with hemolyzing valvular disease accompanied by acute renal failure that did not exist before.



It further illustrates that the Pump Technologist and the Dialysis Technician *do* have a common ground—a togetherness, and should not want to join hands in the operating room during the wee hours of the morning, but join forces through the Am S.E.C.T. and educate one another in advance.

Davis Bonuelos
Supervisor, Hemodialysis Unit
The Methodist Hospital
6516 Bertner Blvd.
Houston, Texas 77025

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9. FOR COMPLETION BY HEADQUARTERS ORIGINATIONS AUTHORIZED TO MAIL AT SPECIAL RATES (Section 1103 (2), Postal Manual): (Check one)		☐ First-class matter ☐ Second-class matter ☐ Third-class matter ☐ Fourth-class matter ☐ Fifth-class matter ☐ Sixth-class matter ☐ Seventh-class matter ☐ Eighth-class matter ☐ Ninth-class matter ☐ Tenth-class matter ☐ Eleventh-class matter ☐ Twelfth-class matter ☐ Thirteenth-class matter ☐ Fourteenth-class matter ☐ Fifteenth-class matter ☐ Sixteenth-class matter ☐ Seventeenth-class matter ☐ Eighteenth-class matter ☐ Nineteenth-class matter ☐ Twentieth-class matter ☐ Twenty-first-class matter ☐ Twenty-second-class matter ☐ Twenty-third-class matter ☐ Twenty-fourth-class matter ☐ Twenty-fifth-class matter ☐ Twenty-sixth-class matter ☐ Twenty-seventh-class matter ☐ Twenty-eighth-class matter ☐ Twenty-ninth-class matter ☐ Thirtieth-class matter ☐ Thirty-first-class matter ☐ Thirty-second-class matter ☐ Thirty-third-class matter ☐ Thirty-fourth-class matter ☐ 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