Title : ENFLURANE AND RENAL FUNCTION AFTER TRANSPLANTATION

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Introduction. Enflurane has been incriminated in a few cases of renal dysfunction (1,2), including one patient with a failing kidney transplant (3). However, the contributory role of enflurane as a nephrotoxic agent following kidney transplantation has not been clearly defined. The objective of this study was to evaluate whether enflurane administration might have impaired renal function in recipient patients of renal homografts.

Methods. This study was made through a retrospective review of forty-four patients who underwent renal transplantation for the first time. The patients were grouped according to the main anesthetic agent used. Group A (N=16) received halothane; Group B (N=9) received narcotics + N_2O and Group C (N=19) was anesthetized with enflurane. The data analyzed included urinary output (Uo, L/24 hours), BUN (mg %), creatinine in blood (Cr, mg%), creatinine clearance (Ccr, ml/min), sodium in urine (Na^+U, mEq/L), specific gravity of urine (SG), urine-to-plasma ratio of urea nitrogen (U/P UN), and creatinine (U/P Cr), as well as the percent concentration used per minute of anesthetic exposure. These parameters were analyzed at 1, 5 and 10 days after grafting. Unpaired t-test and regression analysis were used to compare the data.

Results. Following renal transplantation all patients showed a non-oliguric renal failure syndrome with elevated BUN, Cr and impaired Cr clearance which gradually improved during the 10-day follow-up period (Table I).

The changes observed in the enflurane group were not significantly different from those observed in the halothane or narcotic groups.

There was no correlation between Uo, Ccr and SG versus percent concentration per minute of exposure in either the halothane or the enflurane group.

U/P BUN and U/P Cr increased significantly as a function of time, which was similar for all the groups.

Conclusion. The fact that no statistically significant difference was found in the renal function studies among patients receiving different anesthetic agents casts doubt that enflurane may be a responsible factor in the renal dysfunction found after transplantation.

TABLE I

	Post Tx Day	Halothane	Narcotic	Enflurane
U, Vol Liters	1	2.2±1.5	2.5±1.3	2.2±1.6
	5	1.6± .8	1.6± .5	1.7±1.1
	10	1.8± .8	1.9± .7	1.7± .9
BUN mg%	1	54±17	55±29	50±34
	5	50±38	45±26	52±37
	10	46±39	50±34	47±27
Cr blood mg %	1	5.9±3.4	7.1±4.7	5.2±5.0
	5	3.5±4.7	2.3±1.1	3.7±3.9
	10	2.4±3.0	2.1±0.9	2.8±2.8
Ccr ml/min	1	39±12.7	19±24	55±21
	5	51±25	49±19	56±30
	10	63±29	54±24	55±28
Na^+ U mEq/L	1	61±30	63±27	63±23
	5	79±42	98±86	62±40
	10	74±41	68±42	60±37
SG	1	1.013 ±.003	1.016 ±.001	1.014 ±.003
	5	1.018 ±.002	1.019 ±.001	1.016 ±.005
	10	1.019 ±.005	1.019 ±.003	1.017 ±.005

Values are mean ± SD.

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