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Effect of Intravenous Hydrochloric Acid upon Narcosis in Dogs.

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In view of a recent report by MacGilvra,[1] describing a remarkable effect of the intravenous administration of hydrochloric acid as a means of terminating anesthesia, it seemed advisable that further experimental studies be carried out in order to establish more definitely a possible clinical application. MacGilvra, repeating observations made by Moorman, terminated ether anesthesia in rabbits guinea pigs, rats and monkeys by the intravenous injection of small amounts of N/10 hydrochloric acid. MacGilvra reported the clinical application of this method for terminating anesthesia (Palinaesthesia) in a patient under "Avertin."

Our observations were made on 8 dogs, using "Nembutal" intraperitoneally, "Avertin" by rectum and ether by inhalation. It was found impracticable to use chloroform because of the extremely rapid, spontaneous recovery from this drug in the dog. Each observation was made on 2 dogs, simultaneously, one of which was given the intravenous hydrochloric acid. Each pair of dogs was matched, as closely as possible, in weight and breed. Considerable difficulty was encountered in determining the depth of narcosis at the various intervals during the observations, so an arbitrary set of criteria was adopted. In each case an approximately equal degree of deep anesthesia was induced, and the rapidity of recovery gauged by noting the time of appearance of wink reflex, spontaneous movements of the forelegs, attempt to stand, and finally, the ability to stand unassisted. The dose of hydrochloric acid varied from a single injection of 3 cc. of N/10 aqueous solution to repeated injections totalling 65 cc. of the same solution. No untoward effects were noted. The results of our observations are shown in the accompanying table.

It is apparent, that in no case did hydrochloric acid accelerate recovery from anesthesia in the dog. On the other hand, in almost every instance, the animal receiving this medication recovered more slowly than the control. It should be stated, however, that the animal selected for the hydrochloric acid was apparently the deeper anesthetized, so that it was not definitely established that the hydro-

[1] MacGilvra, W. V., *Harv. Dent. Rec.*, 1934, **8**, 1.

TABLE I.

Dog No.		Wt.	Anesthesia	HCl-N/10	Return Reflexes	Legs Move	Attempt to Stand	Stands
		Kilos		cc.	Minutes			
C25		23.6	Ether	3	(100 sec.)	6	10	15
Z18	C	20.4	"	—	1	4	7	9
Z18		20.4	"	3	1	4	7	12
				3				
				3				
C25	C	23.6	"	—	1½	5	9	13
Q32		11.0	Avertin (.125 gm.)	5	25	35	50	60
				20				
				20				
				20				
B343	C	11.4	" " "	—	30	35	60	65
Q34		26.9	" (.135 gm.)	5	1	6	10	20
Z7	C	24.4	" " "	—	(not abs.)	3	10	15
I179		26.4	Nembutal (.78 gm.)	2	80	—	—	16 hrs.
				2				
				2				
				2				
				2				
				2				
I56	C	31.4	" (.98 gm.)	—	80	—	—	6 hrs.

C equals Control.

chloric acid inhibited recovery. Although our observations have shown no effect comparable to that reported by previous observers, further studies on the other laboratory animals are being made.