

slow changing forward flow tended to upset the tuning of the circuit and the measurement of subsequent beat outputs." 4. The automatic zeroing precludes the recording of backflow and analysis of flow changes during the cardiac cycle, particularly with valvular lesions. 5. The low sensitivity of 1 mm deflection for 3.6 cc per second limits the accuracy of the flow determinations.

Summary. A modification of a bristle flowmeter is described which permits direct recording of cardiac output and its fluctuations from one heartbeat to another. The device is inserted into the trunk of the pulmonary artery of anesthetized, heparinized dogs without blood loss and without interrupting blood flow. Zero flow can be established by mechanical means without occluding the vessel. Phasic changes during the cardiac cycle consist of a marked forward flow during cardiac ejection and a brief period of backflow following ejection. Mean cardiac output can be directly

recorded by electrically averaging the phasic flows.

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Effect of a Mercurial Diuretic on Thyroid Uptake and Renal Clearance of Radioiodine.* (21135)

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This study was undertaken to determine what effect, if any, the administration of a mercurial diuretic exerted on the validity of the radioiodine uptake procedure as a measure of thyroid function. It has been demonstrated by Meyers(1) that the analytic procedure for the determination of serum protein-precipitable iodine is rendered non-valid by the recent administration of meralluride sodium. Because of the competition between the thyroid and the kidney for the available supply of inorganic iodide, it would also appear that should mercurial diuresis significantly alter renal iodide excretion, this might adversely influence the validity of thyroid

radioiodine uptake studies. The effect on other halogens is better known: the production of a chloride diuresis is one of the early effects of mercurial diuretics; a similar effect has been found in the experimental animal for the bromide ion(2). In man, the renal clearance of iodide, unlike that of bromide, has been stated to appear independent of variations in chloride intake and excretion(3); in the dog, however, the renal clearance of iodide, like bromide, is largely determined by the rate of chloride excretion(4).

Method. In this study, thyroid radioiodine uptakes were initially determined at 6 and 24 hour periods on 8 euthyroid patients, 3 of whom had congestive heart failure. Uptakes were repeated 2 weeks later, at which time the intramuscular administration of 2 ml

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TABLE I. Renal Clearances before and after Injection of 2 ml Meralluride Sodium.

Patient	Period	Urine vol, ml	Chloride excretion, meq	I ¹³¹ clearance, ml/m
NT	Before Hg	A 18		47.2
		B 18	2.00	46.0
	After	C 100		48.9
		D 40	5.05	43.6
FD	Before	A 115		22.0
		B 140	5.65	24.6
	After	C 230		23.4
		D 175	15.35	18.4
HT	Before	A 160		61.0
		B 125	10.16	44.5
	After	C 155		42.4
		D 190	36.90	49.0
HF	Before	A 350		28.8
		B 320	4.85	27.8
	After	C 90		28.4
		D 65	17.91	25.9

meralluride sodium preceded the I¹³¹ test dose. In addition, renal clearances of radioiodine were determined on 4 patients before and after intramuscular administration of 2 ml of meralluride sodium. All had clinical diagnoses of heart disease without congestive failure. Three were euthyroid; one was slightly hypothyroid. Each patient received orally 40 microcuries of I¹³¹ along with an initial oral tap water load of 500 to 1500 ml. All studies were conducted during the 6-hour period following oral administration, with the assumption that the protein bound I¹³¹ fraction during this period was insignificant. Clearances were determined for two 30-minute intervals (Table I, Periods A and B) during the third hour following administration; 2 ml meralluride sodium were given intramuscularly at the end of third hour; and two 30-minute clearances (Periods C and D) were again determined during third hour following the mercurial injection. Clearances were calculated by the standard formula of total urinary I¹³¹ excretion during the 30-minute period divided by the plasma level at the mid-point of each period—a procedure shown by Berkson(5) to agree generally with the more exact parametric method of calculation of clearance after one-

dose administration. All specimens were counted in a deep well type scintillation counter.

Results. Thyroid Uptake. Of the 8 patients who had standard 6 and 24 hour thyroid uptake studies, there was no significant difference, outside of the limits of reproducibility of the procedure, in determinations with and without the simultaneous administration of 2 ml meralluride sodium.

Renal Clearance. The results in the 4 patients with renal clearance studies are summarized in Table I. The extent of volume diuresis varied widely during the test periods, apparently depending upon the relative diuretic effect of the water load which preceded the two control clearance periods and that of the mercurial injection which preceded the last 2 clearance periods. Both chloride and radioiodide excretion remained remarkably independent of the fluctuations in degree of water diuresis. In all patients, chloride excretion during the test period following mercurial injection rose to between 250% to 350% of the control values. In contrast, during the same period renal clearances of radioactive iodine were essentially unchanged, remaining within the range of 88% to 98% of the control values. These effects are summarized graphically in Fig. 1, in which response to meralluride sodium injection is compared to the control value, represented as 100%.

Comment. These findings suggest an almost total indifference of the renal mechanism for excretion of iodide to the alterations in renal tubular function associated with the early effect of a mercurial diuretic. This lack of re-

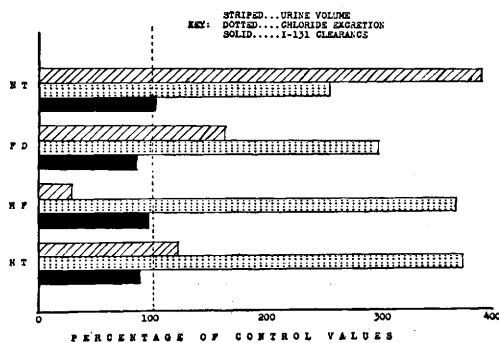


FIG. 1.

sponsiveness is in marked contrast to the effect on chloride excretion. In application, the results also suggest that the validity of the standard radioactive iodide uptake studies of thyroid function is not affected by the administration of a mercurial diuretic.

Summary. 1. Meralluride sodium (Mercurhydrin®) had no effect upon the results of the 6 and 24 hour thyroid uptake procedure in 8 euthyroid patients. 2. Renal I^{131} clearances were determined before and after injection of meralluride sodium in 4 patients, and compared with simultaneous chloride excre-

tion data. Radioiodide clearances remained unchanged in the face of a consistent and marked increase in chloride excretion.

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Effect of Colchicine on Eosinophil Count in the Hypophysectomized Rat.* (21136)

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In previous clinical studies(1) it has been observed that 3 mg of colchicine injected intravenously has an eosinopenic effect. On the other hand, it has been shown by various authors(2-4) as well as by our own investigations, that there is no demonstrable effect on the excretion of the urinary corticoids following colchicine administered orally or parenterally. Thus it appeared possible that this eosinopenic response to colchicine was not mediated through the pituitary-adrenal relationship. The purpose of this study has been to determine whether colchicine administration causes eosinopenia both in normal and in hypophysectomized rats.

Methods. The experiment was run with 22 young male rats of the Wistar strain. Eleven were hypophysectomized. Six of the hypophysectomized and 7 of the normal rats were injected subcutaneously with 1 ml of colchicine* in physiological saline solution in a concentration of 0.2 mg per ml. Control groups

were similarly injected with 1 ml of physiological saline solution. For counting the eosinophils we employed the staining method of Speirs and Meyer(5). The stain contained 10 ml phloxine solution (1%), 1 ml diethylene glycol, 4 drops ofalconox (0.5%), and 30 ml distilled water. To this solution 8 ml of acetone were added just before use. The eosinophils were counted before injecting colchicine or saline, and were again counted

TABLE I. Eosinophil Response to Colchicine and to Saline Injections in Intact Rats.

	Eosinophils/mm ³ following No. of hr		
	0	4	48
Saline inj.			
	182	200	500
	225	25	113
	225	138	578
	273	100	617
Mean value	226	116	452
Colchicine inj.			
	475	38	250
	317	38	38
	13	13	100
	75	163	113
	100	57	113
	88	138	63
	1125	210	125
Mean value	313	94	115

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