bacitracin is largely effective against gram-positive microörganisms, but it is interesting to point out that penicillin, whose spectrum of antibacterial activity somewhat resembles that of bacitracin, was found to be highly effective against *P. multocida,* as may be seen from Table I. That penicillin inhibits growth of this species was previously reported by Schipper(1) and by Queen and Quortrop(4). In view of the fact that *P. multocida* is a gram-negative rod of the family *Parvobacteriaceae* which includes, among others, the members of the genus *Hemophilus* it is somewhat surprising to find that 8 strains of *P. multocida* are rather resistant to streptomycin, as may be seen from Table I. Coles(5) studied the sensitivity of 78 strains of *P. multocida* by the agar plate method and found that for complete inhibition all but seven strains required 1 μg or more and that none of the strains was inhibited by less than 0.5 μg of streptomycin.

The above reported experiments confirm the observation of McLean, Schwab, Hillegas and Schlingman(6) and of White, Alverson, Baker and Jackson(7), to the effect that both chloromycetin and polymyxin are effective against *P. multocida.* The minimal effective concentration of polymyxin and "Aerosporin", according to White and associates(7), was 1 μg/ml. It may be pointed out that as little as 0.0001 to 0.03 μg/ml was adequate to prevent growth of small inocula of five of the strains of *P. multocida* used in this study.

Summary. The bacteriostatic activity toward eight strains of *Pasteurella multocida* of aureomycin, terramycin, and bacitracin and the relative efficacy of four additional antibiotics, previously studied only singly, have been determined. It was found that the eight strains were very susceptible to penicillin, aureomycin, chloromycetin, terramycin and polymyxin B but rather resistant to bacitracin and streptomycin.

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Eosinophil Response to Epinephrine and Nor-epinephrine. (17895)

PETER C. PELLEGRINO, GLENN M. MORRIS, AND SIDNEY TRUBOWITZ*
(Introduced by J. Murray Steele)
From the Medical Service, Halloran VA Hospital, Staten Island, N. Y.

It has been demonstrated repeatedly that a variety of stress conditions(1), adrenocorticotrophic hormone, adrenal cortical hormone and epinephrine(2,3), produce a pronounced reduction in the number of circulating eosinophils. This response has been shown to depend on the stimulation of the adrenal cortex. The fall in circulating eosinophils is so constant and sensitive an indicator of oxycorticosteroid release that it has been incorporated into a standard test for adrenal cortical function(4). For this purpose, either ACTH or epinephrine has been used. Nor-epinephrine†

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is 1(3',4'-dihydroxyphenyl)-2-aminoethanol and differs from epinephrine only in the absence of a methyl group on the terminal nitrogen. It has been found in the normal adrenal medulla, in the post-ganglionic adrenergic nerve endings and in high concentration in pheochromocytomas(5). Nor-epinephrine has been postulated by some to be the mediator of the excitor impulse of the sympathetic nervous system(6,7). Despite the remarkable similarity in chemical configuration of the two sympathomimetic amines there is a pronounced difference in their pharmacologic activity(8). The purpose of this study was to compare the effect of nor-epinephrine and epinephrine on the circulating eosinophils of man.

Material. A group of hospital patients admitted for a variety of complaints, but generally in good health, was selected for this study. No patient selected was suffering from obvious adrenal insufficiency, heart disease or any chronic debilitating disease.

A total of 53 patients was grouped for study as follows: 22 patients received 0.2 mg of epinephrine. 20 received 0.2 mg of nor-epinephrine. 11 were given 0.3 mg epinephrine; 6 received 0.3 mg of nor-epinephrine at later date

Method. Solutions of epinephrine and nor-epinephrine were prepared to contain 0.2 mg or 0.3 mg of the material in 200 ml of normal saline. Only the levo form of nor-epinephrine was used in this study. The test solutions were administered intravenously during the course of 1 hour. The tests were done at 8:00 A.M. on subjects who were kept at basal conditions from 10:00 P.M. of the preceding night. Venous blood was drawn immediately before starting the infusion and

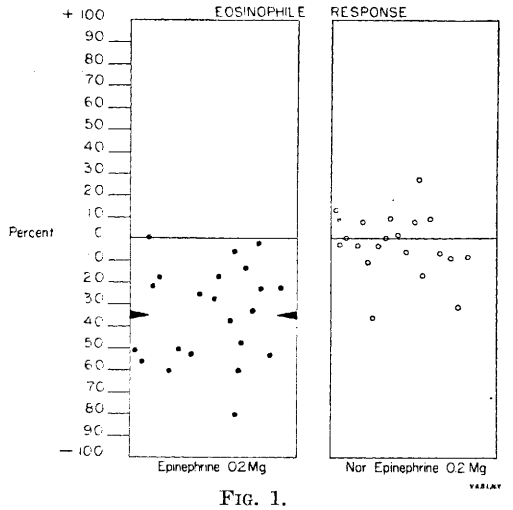

FIG. 1.

% change in eosinophils following 0.2 mg of epinephrine and nor-epinephrine.

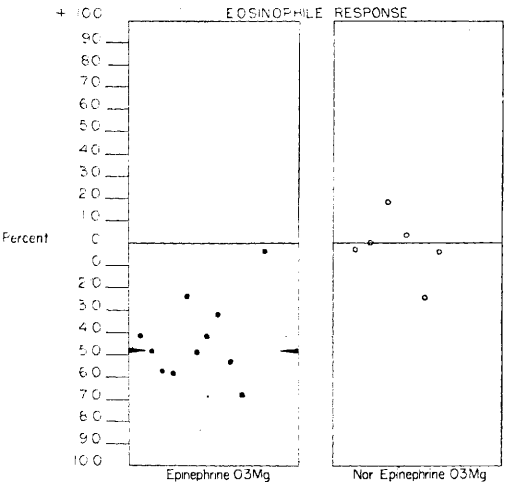

FIG. 2.

% change in eosinophils following 0.3 mg of epinephrine and nor-epinephrine.

4 hours later. Five ml samples of venous blood were taken on each occasion, without stasis, and stored in oxalate (Wintrobe) tubes at 4°C. The enumeration of the eosinophils was performed by the hemocytometer technic, using the 0.2 mm deep Levy counting chamber. The diluting fluid used was that described by Randolph(9). Two complete chambers were counted for each determination.

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Results. There was an average fall of 35% in the circulating eosinophils 4 hours after the administration of 0.2 mg epinephrine. In 50% of the observations the fall in eosinophils was greater than 30%. On the whole, a consistent fall in the number of eosinophils was not noted following the administration of 0.2 mg of nor-epinephrine with the exception of two subjects who showed drops of 36% and 31%. (Fig. 1). An average fall of 48.6% in the circulating eosinophils was found after the administration of 0.3 mg of epinephrine. One subject with schistosomiasis and a high initial eosinophil count (418 cells per cu mm) showed no significant change. Following the injection of 0.3 mg nor-epinephrine no significant change in the eosinophile count was found. One patient responded with a drop of 23%. (Fig. 2).

Many of the subjects receiving 0.3 mg of epinephrine complained of mild palpitation, tremor and tingling. The majority of the patients receiving nor-epinephrine complained of mild pressure headaches and demonstrated a moderate bradycardia.

It was our impression that the 3 patients who, following the administration of nor-epinephrine, responded with a drop in the circulating eosinophils, were all tense, anxious, and emotionally disturbed by the experimental procedure. No other obvious factors were in operation.

Conclusion. (1) Nor-epinephrine (levo) in dosage given (0.2-0.3 mg) produces no consistent change in the number of circulating eosinophils of man.

(2) Nor-epinephrine is probably not a physiologic excitor of the pituitary adrenal system.

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Sex Difference in the Response of Rats to Sodium Pentobarbital.* (17896)

L. W. JARCHO,† C. EYZAGUIRRE, AND J. L. LILIENTHAL, JR.

From the Physiological Division, Department of Medicine, Johns Hopkins University and Hospital, Baltimore.

Considerable difference of opinion has been expressed in the literature concerning the part played by sex in the response of the rat to anesthetic doses of sodium pentobarbital (Nembutal). Thus Barron(1) and Carmichael(2) found this anesthetic equally effective in both sexes, while Holck and Kanan(3) found that males were more resistant to its action. This resistance was confirmed by Moir(4) and Homburger *et al.*(5) in adult males, but the difference between the sexes disappeared or was actually reversed in immature animals. These reports are based upon "sleeping time" following single doses of sodium pentobarbital given once or repeated upon successive days. In the course of a series of experiments on neuromuscular function, the opportunity arose of examining this problem from a different point of view. The necessity for maintaining deep surgical anesthesia over periods of several hours served to sharpen the contrasting response of the two sexes to the narcotic. The size of the series was sufficient to allow statistical analysis.

The rats used were adults of the Sherman and Whelan strains weighing from 160 to 420 g. They were fed on a diet of Purina

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