normal physiological process(8). This question is far from settled.

Under some experimental conditions, such as injection of noxious substances, *i.e.,* Cpd 48/80(9); stilbamidine(10); ovomucoid in the rat(11); Russel viper venom(12), etc. . ., mast cell degranulation is widespread in the tissues. There is thus little question that explosive changes can be elicited experimentally and that these may approximate pathological events as they may occur after snake bite or in anaphylaxis.

But is degranulation the way mast cells perform whatever function they normally subserve in connective tissues? The question remains unanswered; it is the purpose of this paper to underscore that in seeking the answer, reliance on histological preparations alone may lead to erroneous intrepretations or conclusions.

Summary. The present study indicates that significant morphological changes in mast cell size, shape, and granule size can occur following conventional fixation, and that these fixed cells are also particularly prone to damage by mechanical manipulations inherent in standard histological techniques. In all cases where mast cell degranulation has been described, these factors deserve serious consideration to differentiate fact from artifact.

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Failure of Reserpine to Modify the Incidence of Aortic Ruptures Induced in Turkeys by Diethylstilbestrol.* (30524)

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Aortic ruptures of turkeys occur under natural conditions, and it has been reported that reserpine is highly effective in reducing mortality(1). The mode of action of reserpine in the disease has not been resolved, although it has been suggested that beneficial effects were derived from its hypotensive rather than tranquilizing property(2).

Numerous reports attest to the ability of diethylstilbestrol (DES) to induce a high incidence of aortic ruptures in turkeys(3,4). Since therapeutic studies have not been included in these trials, it seemed appropriate to determine the influence of reserpine on the incidence of aortic ruptures and hemodynamic responses in turkeys treated with DES. The results of these studies are presented here.

Materials and methods. Experiment 1. Broad-Breasted Bronze male turkey poults were raised by conventional poultry husbandry methods and fed a 20% protein commercial chick-starter mash containing 0.5% sodium chloride until 4 weeks of age. The poults were changed to a 19% protein diet containing 0.5% sodium chloride at 4 weeks, and to a 23% protein diet containing 3%

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TABLE I. Influence of Reserpine on DES-Injected Poults (Exp I).

Reserpine	Wt*	Mortality (%)	Systolic blood pressure (mm Hg)†		Total lipid‡		Total cholesterol‡	
			DES	Control	DES	Control	DES	Control
No	11.5	66	170	267	1140	180	980	140
Yes	10.9	61	167	250	1190	228	1020	150

* Lb at 16 wk.
† Avg of triplicate measurements for 4 birds at 15 wk of age.
‡ mg/100 ml serum. Avg of duplicate samples for 3 birds at 15 wk of age.

sodium chloride at 10 weeks of age(5). At this time, 21 turkeys were started on weekly injections of 30 mg of DES in liquid form (4), and 9 birds were not treated with DES. Starting at 11 weeks of age, 1 ppm of pure reserpine was added to the diet of all 30 birds. Five days later, the reserpine level was reduced to 0.2 ppm, and this diet was continued until the experiment terminated at 18 weeks of age. Another 40 turkeys were started on a similar feeding schedule at 10 weeks of age. Twenty-eight of these were started on weekly DES injections at this time while 12 poults were not dosed with DES and served as controls.

Beginning at 10 weeks of age and continuing weekly until the trial ended, heparinized blood was collected for total plasma lipid(6), and total plasma cholesterol determinations (7). At the same times, turkeys were weighed and indirect systolic blood pressures determined by a method described previously(8).

Experiment 2. For the first 52 days, 60 groups of turkeys, each group containing 6 birds, were managed as in Exp. 1. At the end of this period they were changed to the 23% protein diet containing 3% salt. At this time blood samples were first collected and indirect systolic blood pressures recorded. Forty-eight groups of these poults were treated with DES at 6 weeks of age. Starting 10 days later, 16 groups of the DES-treated turkeys were fed 5 ppm reserpine for 5 days and 1 ppm until the experiment terminated at 12 weeks of age. A second 16 groups of DES-injected turkeys were fed 1 ppm reserpine for 5 days and 0.2 ppm for the remainder of the trial. A third 16 groups of DES-injected poults received no further treatment. Four groups of uninoculated turkeys were fed the high level of reserpine and the same numbers of birds were fed the low level, without any additional treatment. Another 4 groups of birds received no treatment or medication of any kind and served as controls.

Total plasma lipid and cholesterol determinations, weights, and indirect systolic blood pressures were determined weekly on each group of turkeys.

Results. Exp. 1. Sixty-six per cent of the turkeys dosed with DES died of aortic ruptures while 61% similarly treated and fed reserpine died of the disease (Table I). Reserpine had no appreciable influence on total plasma lipid or cholesterol levels, but did cause a slight lowering of systolic blood pressure and reduced weight gains.

Exp. 2. Thirty-two per cent of the turkeys injected with DES died of aortic ruptures, and an equal number of those treated similarly and fed reserpine died of the disease (Table II). No differences in mortality rates were noted as a result of feeding 2 levels of reserpine. Both dosages had a detrimental effect on weight gains, but neither level of the drug affected plasma lipid or cholesterol values. Both levels lowered systolic blood pressure by approximately 36 mm Hg. Since there was no difference in response from feeding the 2 levels of reserpine, results were combined for this presentation.

Discussion. It has been reported that mortality is reduced in natural outbreaks of aortic ruptures in turkeys by adding reserpine to the feed(1). Palmer *et al*(9) reported that dissecting aneurysms in man could be treated more advantageously with reserpine and other drugs than by surgical procedures. Moreover, the incidence of beta-aminopropionitrile (BAPN) induced aortic ruptures of turkeys is favorably influenced by reserpine(10). In

TABLE II. Influence of Reserpine on DES-Injected Poults (Exp II).

Reserpine	Weight* DES	Weight* Control	Mortality (%)	Systolic blood pressure (mm Hg) † DES	Systolic blood pressure (mm Hg) † Control	Total lipid‡ DES	Total lipid‡ Control	Total cholesterol‡ DES	Total cholesterol‡ Control
No	7.5§	8.6	32	154	236§	1185	155	1038	135
Yes	7.0	8.4	32	154	172	1133	171	1050	125

* Lb at 12 wk.
† Avg of triplicate measurements for 4 birds at 11 wk of age.
‡ mg/100 ml serum. Avg of duplicate samples for 3 birds at 12 wk of age.
§ Highly significantly different for respective controls.

this report and in previous work(4,8), it has been shown that DES causes relative hypotension and angiorrhexis in turkeys. In addition, the incidence of aortic ruptures induced by DES treatments is increased by elevating dietary sodium chloride levels(4). Even though reserpine caused a slight lowering of systolic blood pressure in older birds treated with DES, the drug had no beneficial influence on the incidence of aortic ruptures induced by DES. On the other hand, it has been postulated that reserpine mitigated mortality in naturally occurring cases of aortic ruptures through its hypotensive activity(2).

The cause of naturally occurring cases of aortic ruptures in turkeys is still unknown, and the disease cannot be diagnosed prior to death. Consequently, the pathogenesis of this form of the disease has not been as extensively studied as the experimental forms of the syndrome. However, as a result of experiments with BAPN toxicosis in turkeys (11), it becomes increasingly doubtful that all cases of aortic ruptures in animals are associated with hypertension.

Summary. Reserpine in the feed at the levels described herein did not reduce the incidence of aortic ruptures of turkeys induced by diethylstilbestrol. Reserpine had no effect on total plasma lipid or cholesterol levels, but did cause reduced weight gains and a slight lowering of the systolic blood pressure of older DES-dosed poults.

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