

In attempting to explain these results reference may be made to the records of spontaneous tumor in 4 of these strains. (No data are available for the "Yellows".) The data (Table II) are based upon mice over 6 months old. Earlier records of the Bagg and 1194 strains have shown a small percentage of sarcoma (less than 2%). The later stock records given here are selected as being a closer control.

Only one spontaneous sarcoma occurred in these groups. No difference can be demonstrated between strains just as no difference was demonstrated between strains for induced sarcoma. However, as regards lung tumor the strains are dissimilar. The Bagg strain which here shows 31.8% gave 81.4 to 89.1% after dibenzanthracene. Evidently subcutaneous injection of dibenzanthracene induces lung tumor as well as sarcoma. The Bagg strain is also plainly more susceptible to spontaneous lung tumor than are the other 3 strains just as it was more susceptible to induced lung tumors than were the other strains.

These results confirm our earlier conclusions that strains differ in susceptibility to induced tumor and that susceptibility is organ-specific.

A number of other tumors occurred in these experiments but they will be treated more fully later. Mention might be made, however, that a mammary tumor occurred in a male in Strain 5.

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### Skin Reactions in Sarcoid.

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Based on the hypothesis that sarcoid, like lymphogranuloma inguinale, might be a virus disease and that, like the latter, an antigen could be prepared from infected material for use for diagnostic purposes, the following work was done.

A sarcoid lesion of the skin, 2 cm. in diameter, was removed from the first patient described below. A portion of the tissue was taken for microscopic study, while the remainder was ground with the aid of sterile sand. To this, normal saline was added in a volume equal to 6 times that of tissue. This preparation was then sterilized

by heating to 60°C. for 2 hours on 2 consecutive days. Aerobic and anaerobic cultures were negative at the end of 48 hours.

In each of the following cases, stained sections and animal inoculation of the tissue removed were negative for tuberculosis. The patients showed no evidence of tuberculous infection by clinical examination, cutaneous tests or X-ray examination.

Case No. 1. A 25-year-old female, who 4 years ago had her spleen removed. The spleen weighed 540 gm. Microscopically, it was studded with round, well defined, single or confluent, large, inflammatory lesions consisting of fibrous tissue, elliptical macrophages and a few lymphocytes. About the periphery were a few lymphocytes, macrophages and eosinophils. A few of the lesions contained multinucleated giant cells. The microscopic diagnosis was sarcoid.

Two months after splenectomy, a skin lesion appeared on the left forearm, and throughout the last 4 years additional lesions have appeared, which slowly, but progressively, enlarged.

Many firm, elevated, bluish-red, irregularly discoid lesions, 0.3-2.0 cm. in diameter, were scattered over the face, arms, and, to a lesser degree, the legs and buttocks. Physical examination revealed no other abnormalities except an enlarged liver, which extended to the umbilicus and right iliac crest.

Microscopic examination of the lesion removed by biopsy revealed a picture similar to that in the spleen.

The patient was injected with 0.05 cc. of the antigen intradermally. Within 24 hours, a firm red papule, 3 mm. in diameter, appeared. It increased slowly in size until the end of 36 hours and then slowly regressed. At the end of a week, there was still a small papule. Two days after the first, a second injection of 0.10 cc. resulted in a larger papule with a narrow zone of erythema. Three subsequent injections, given at 3-day intervals, produced similar reactions.

Within 3 weeks, it was noticed by several observers, each unaware that treatment had been given, that there was a definite decrease in size and redness of the skin lesions.

Case No. 2. This 13-year-old white girl had a splenectomy 4 years ago with a biopsy of the liver and a mesenteric lymph node. The spleen weighed over 500 gm. Histologically, the spleen, the liver and mesenteric node showed lesions similar to those in the preceding case, interpreted as sarcoid.

The patient was given 0.15 cc. of the antigen intradermally and, within 24 hours, a firm red papule had formed, surrounded by a

zone of erythema. At the end of 36 hours, the area of erythema was 1.5 cm. in diameter and the papule 7 mm. in diameter. The erythema lasted 48 hours, the papule 8 days.

Case No. 3. This was a young adult female who within a few months had a resection of 23 cm. of ileum and colon. There was marked thickening and induration of the intestinal wall in the region of the ileo-cecal valve. Microscopic examination showed lesions similar to those above, though not as numerous.

Four weeks after operation, 0.10 cc. of antigen was administered intradermally. Within 24 hours, a firm red papule developed; in 36 hours, it was 5 mm. in diameter and was still present after a week.

Case No. 4. This middle-aged white female had a resection of a loop of intestine 2 years ago following a clinical diagnosis of "regional ileitis." Microscopically, the lesions were similar to those in the preceding cases and were interpreted as sarcoid.

Intradermal injection of 0.10 cc. of antigen produced a firm, red, elevated papule, 6 mm. in diameter, at the end of 36 hours.

Four normal healthy adults were used as control cases. They were given 0.10 cc. of the antigen intradermally, and were completely negative at the end of 36 hours. Two of these individuals had positive tuberculin reactions, and the third had had active tuberculosis 2 years ago.

The above cases, while not sufficient to offer conclusive evidence, suggest that the hypothesis that sarcoid is a virus disease may be correct, and that an antigen may be prepared for diagnostic purposes. More extensive study is being carried out and will be reported later.

*Summary.* (1) Four cases with clinical and pathologic evidence of sarcoid gave skin reaction following the intradermal injection of an antigen made from a sarcoid lesion of the skin. Four normal individuals gave no such reaction. (2) These results suggest that sarcoid is a virus disease and that it is possible to prepare a diagnostic antigen.