SARCOMA OF THE HEART IN A GUINEA PIG

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Literature on cancer in animals shows a scarcity of neoplasms in the guinea pig, which is noteworthy, considering the large number of these animals which pass through the hands of the research worker. Stilling (1) suggests as an explanation that since they are largely used in lethal experiments few live to their cancer age.

The First Scientific Report of the Imperial Cancer Research Fund (1904) reports no cases of tumors in the guinea pig. Beatti (2), discussing tumors in animals in 1916 reports no guinea-pig tumors, and more recently Wolf (3) mentions neoplasms in guinea pigs only to comment on their rarity. However, Teutschlaender (4) on the same subject mentions several cases which had been reported at that time. Wood (12) in 1916 reported a sarcoma in a guinea pig.

Sternberg (5) reported a case of metastasizing adenocarcinoma of the mammary gland. Jones (6) also reported a case of adenocarcinoma of the mammary gland in an old female, which had not metastasized but which he transplanted through a series of eight animals, two of which showed metastases. Murray (7) reported a liposarcoma of the region of the mammary gland which has been transplanted through many generations. No metastases are observed. Miguenz (8) reported a round-cell sarcoma of the tissues of the neck with metastases in liver, kidney and pancreas, which he transplanted through nine passages. Lubarsch (9) reported two cases: one of a spindle-cell sarcoma of the muscles of the back with metastases in the spleen, and one of a spindle- and giant-cell sarcoma of the neck with multiple metastases. Both were successfully transplanted. Leo Loeb (10) reports and discusses ten examples of what he regards as tumors of the ovary showing a picture similar to chorioepi-
thelioma. He believes they develop from embryonic placenta
tissue and are connected with parthogenesis in cases with atresic
follicles. Teutschlaender in discussing these speaks of them as
"hyperplastic luteal cells" and "transitory tumors."

Fig. 1. Longitudinal section, magnified 7 diameters, of the heart of the guinea pig,
showing primary round-cell sarcoma of the myocardium.

The growth here reported is one of the heart in a guinea pig. Magnusson (11) discussed the question of heart tumors in
animals and reported 166 cases, but there were none in the guinea
pig. However, it is of interest to note, in view of the following
report, that 41 of these cardiac tumors were lymphosarcomas.
The animal was a young male of about 400 grams weight. It had been under observation for about a month and in the last two weeks was observed to be losing in weight rather than gaining. It became quite sickly and died. Autopsy showed the following: The heart was enlarged to about twice the normal size. The wall of the left ventricle was largely replaced by white growth. It did not seem to extend to the right ventricle or to the auricles. The heart was firm and not nodular. There were no enlarged lymph-nodes about the base of the heart, about the great vessels, or in the mediastinum. No unusual tissue connections were noted between the heart and any of the surrounding tissues. There was marked congestion of the lungs and all of the other viscera. No visible tumor masses were found in any of the other organs or tissues.

Fig. 2. Primary round-cell sarcoma of the myocardium of guinea pig, magnified 140 diameters. In the upper part of the section some heart muscle fibers still remain.
Microscopic studies of the tumor revealed a mass of fairly large round cells infiltrating the cardiac muscle in every direction. There was no capsule and little conspicuous additional stroma or blood vessels. The cells were similar throughout and evenly distributed and showed no areas of disintegration or necrosis. They were rich in nuclear material and showed many dividing forms. There were numerous small polypoid growths of tumor cells extending into the cardiac cavity. A study of the tissues of the viscera showed one small cellular embolus in the portal vein in the liver. Otherwise the tissues showed little besides a marked congestion. Dr. H. Gideon Wells, who examined the section, believes it to be a lymphosarcoma. The animal before death had been used for supra-vital stain studies of the blood, and although no routine leukocyte or differential count had been made on the blood, it seems probable that any marked increase in the leukocytes would have been noted in the vitally stained preparations. With the exception of some possible increase in the lymph cells of the lung there was no noticeable hyperplasia of the other lymph tissues.

This is the only case of the kind reported in the guinea pig. However, the fact that one fourth of the cardiac tumors in animals, as discussed by Magnusson, were lymphosarcomas, is at least interesting.

REFERENCES

(9) Lubarsch: See Teutschaender.