

There exist a few reports on the experimental production of muscular neoplasms in animals by physical agents. Beard, Boggess, and von Haam mentioned the occurrence of leiomyosarcomas in rats, which had been exposed to a prolonged irradiation with ultraviolet rays. Vinzent; and Lacassagne and Vinzent recorded the development of a rhabdomyosarcoma from the muscle of the thigh in a rabbit, eleven months after the inoculation with streptobacillus caviae followed by a local irradiation of the abscess formed with 610 r. The investigators attributed the tumor formation to the combined action of the infection and the roentgen-ray treatment. The action of metals (tin) in conjunction with physical trauma was blamed for the appearance of a spindle cellular sarcoma in the gluteal muscle of one out of 27 rats into which pieces of various foreign materials had been implanted (wood, copper, zinc, tin, brass, lead, and clay), and which had been subjected afterwards to additional traumatism by being placed twice a week into a rotating drum (Larionov).

4. VASCULAR TISSUE

Proliferative reactions of the vascular tissue in response to occupational influences may take the form of simple dilatations of preexisting vessels, often combined with some degree of hyperplasia of the vascular elements (telangiectases and varicosities) or they may assume a neoplastic character (hemangioma and hemangioendothelioma).

A. TELANGIECTASES AND VARICOSITIES

Ectases of the veins and capillaries in the subcutaneous tissue, usually associated with a more or less marked degree of tortuosity, are seen many times in individuals whose occupational activities require them to stand for prolonged periods (clerks, nurses, and laundresses), and who develop varicose veins because of excessive and prolonged mechanical static strain exerted on the venous walls of the lower extremities. Persons with a sedentary occupation are apt to acquire hemorrhoids representing local, nodular, or polypous dilatations of parts of the perianal venous plexus for similar static causes, often accentuated by constipation.

The occupational exposure to certain physical and particularly actinic agents (solar rays, ultraviolet rays, roentgen-rays, and radioactive substances) and to several carcinogenic chemicals (arsenic and tar) may result in the development of simple convolutes of angiectases in the subcutaneous tissue. These changes in the preexisting superficial capillaries of the corium are partly of functional origin (loss of contractibility), and partly caused by proliferative and obliterative processes elicited by these agents in the larger and deeper veins, producing localized circulatory disturbances (Windholz; Wood; and Wohlbach).

While a blastomatous transformation of these cutaneous hemangiectases has not been observed after occupational exposure to the above-mentioned physical