

THE BLOOD SUPPLY OF THE LARGE INTESTINE

AIM: A thorough description of macrocirculation and microcirculation is necessary for both research purposes and clinical implications. The aim of the study was to summarize and evaluate the variability of mesenteric arteries branching, their mutual anastomosis and connections on microcirculatory level. The terminology of the intestinal vessels was unified. Crohn's disease vasculature was compared with normal pattern.

METHOD: Detailed overview of literature on both blood supply of the colon and vascular injection methods was accomplished (317 sources ranging from medieval books to recent anatomical and surgical studies). Czech and Latin terminological aspect (*Terminologia Anatomica* 1998) of colon arteries as well as their development were carefully studied. 51 embalmed bodies' intestines with vessels were studied by dissecting. 46 own angiograms (and 31 in literature and internet) were checked. 142 samples were obtained from section material and used for the India ink injections (87), metacrylate injections with Mercor (51), then processed in scanning electron microscope, light microscopy (20) and elucidating method of Spalteholz (5). Morphology and blood supply of omental appendices were studied on the Indian ink injections (11), elucidated specimens (6) and metacrylate injections (18). 14 peroperative samples of colon afflicted with Crohn's disease were harvested for Mercor injections. Combination of the methods applied featuring their advantages and limitations brought satisfying results.

RESULTS: Classification of main arteries and branches, their course, types, arrangement and great variability different from anatomical atlas patterns were assorted and specified. So-called critical points (Griffith's, Toupet's, Sudeck's) were scarified. Their macroscopic importance is clear but functionally, they are replaced by huge intramural plexuses. Clinical importance of the marginal artery was emphasized. Vasa recta, their course, anastomoses, places of wall entry and branching were described precisely. They continue into the intramural plexuses (subserosal, intermuscular, submucosal and mucosal) which form mighty anastomoses throughout the whole wall of colon without any regional differences. Mucosal vessels copy intestinal glands and form a vascular carpet on the internal colon surface. The form, attachment and blood supply of the omental appendices were described. Arterial arches of long vasa recta in their base and tree-like branching were demonstrated. Comparison of normal colon vasculature to vessels of Crohn's disease intestine was performed. Thickened and chaotic network, sprouting, loss of layer differences and borders, and enlarged lymph nodes in all three levels are the main features of Crohn's disease on the intestinal vascular bed.

CONCLUSION: The aim of the study was accomplished on both macroscopic and microscopic levels; clinical application in Crohn's disease was successfully attached.