

arteries taken from fetal life to the age of twenty-one, and found that the connective tissue developed in the intima of the aorta by the growing downward from the ductus arteriosus and upward from the hypogastric vessels. These two layers advanced along the aorta until they met and formed one continuous tissue. Such a uniform and prominent layer he found in no other system of vessels. This development of connective tissue begins immediately after birth and continues into adolescence. Thoma considered that the thickening of the subendothelial layer of fibrous tissue was compensatory, in nature, and due to lessened blood flow.

His view, today, is quite untenable. We do not doubt that there is a disproportion of the fluid blood to the vessel walls in the arterial system, but we cannot believe that this is entirely confined to one district. Moreover, a disproportion between an elastic system of tubes and its contents is only too readily compensated by the contraction of the walls, to say nothing of secretion or excretion of fluid taking place when necessary to alter the contents quantitatively.

This conception of the natural thickening of the intima, in arteries brought about by reduced blood flow, underlies Thoma's principles on arteriosclerosis. Where, in the infant, an entire system of vessels undergoes intimal thickening normally, in the adult, localized areas in the intima take on this change pathologically. In most cases Thoma believed the media was primarily at fault, leading to a slight dilatation. This dilatation immediately gave the essential factors of disproportion, leading to compensatory hypertrophy of the intima.

I have attempted to follow Thoma's studies on arteriosclerosis with the microscope. The changes which he found in the "Nabelblutbahn" as the outcome of the closure of the ductus arteriosus were not evident. It is true that the arteries vary considerably in the amount of connective tissue present in the subendothelial layer, and also in the definiteness of the internal elastic lamina. But this variation is to be noted before birth, and I could never convince myself that in the aorta there were any tissue changes as a result of alteration in the fetal circulation. More particularly the development of the subendothelial layer does not proceed or extend from the fibrous-tissue layer of the ductus arteriosus.