

almost equal size, while it is of greater diameter than the descending arch of the aorta. A distinct narrowing of the aortic arch is to be observed just above the entrance of the ductus into it. This constriction of the aorta serves, to some extent, to prevent a back flow of blood coming from the high-pressured ductus into the arch of the aorta. This lessened caliber of the aorta, above the point of junction, is, it will be seen, merely the expression of the fact that below the point of junction the vessel is fitted to convey an increased amount of blood, that, namely, reaching it from the ductus arteriosus along with that conveyed through the aortic arch, or, conversely, it is an indication that the blood entering from the ductus is not distributed in both an upward and a downward direction, but presses only downward.

It thus becomes evident that the greater part of the work of the circulatory system, during fetal life, is thrown upon the right heart. This fact is borne out by the relative increased size and strength of the right heart over the left, as is seen at fetal autopsy. In newborn children we are accustomed to see the right ventricle almost double the size of the left, and this can only be accounted for by the greater amount of work this organ has to do.

With this more powerful organ the blood pressure in the right heart must necessarily exceed that on the left side. Likewise, the blood pressure in the pulmonary artery, and in the ductus arteriosus, is greater than that in the aorta, thus causing the blood to flow from the pulmonary system to the aorta. Relatively, therefore, the blood pressure during fetal life and before the lungs have become expanded is high in the ductus, and at least of such force to overcome the pressure in the aortic system. In adult life the condition of affairs is reversed, so that the aortic pressure then far exceeds that of the pulmonary system.

The change of the relative pressure from that, as it is found in fetal life, to the condition as we see it in the adult, is not a sudden or instantaneous one, and as Schultz has pointed out there must be a time when the blood pressures in the pulmonary artery and the aorta are equal, and an equilibrium is established between the two systems. This we shall subsequently study in greater detail.