

Single Ventricle By-Pass: the Fontan-Kreutzer Procedure. Novel Human Circulation

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In the evolutionary scale there are many species whose hearts have one (fishes) or two (amphibians and some reptiles) auricles, but only one ventricular chamber. In mammals and humans are the four known chambers.

There is, however, a group of congenital heart diseases in humans in which the blood circulation is sustained by a single ventricle, either by hypoplasia of the other as seen in tricuspid atresia or by the visible absence of the other in the different shapes of univentricular heart. They have similar cameras to the left ventricle or right ventricle or to more undifferentiated, primitive and difficult ones to classify.

Many of these hearts are frequently associated with asplenia and other types of visceral heterotaxies.

The chances of surviving to reach adulthood are scarce and if this occurs should be essentially to the fact of having a pulmonar stenosis, usually infundibular, allowing the absence of pulmonary hyper flow and hypertension. And besides, having an acceptable arterial saturation that, whimsically, we could establish between 85% and 90%. This implies to have an acceptable pulmonary hyper flow with a Qp-Qs about 2:1.

What has been mentioned, of course, it implies a simplification of the topic, and there are many additional factors that may complicate the picture, mainly strokes, infections and multiple alterations that chronic hypoxia carries on all tissues.

The other possibility of prolonging survival is given by two types of palliative surgery, including pulmonary artery banding (PAD) when there is hyper flow, for lack of pulmonary obstruction and hypertension, or systemic-pulmonary anastomosis or type Glenn venous anastomosis when there is stenosis or severe hypoxia.

The history of medicine has many discoveries performed by different groups of researchers who were unaware of the findings of others. The most notable case and related to Sociedad Argentina de Cardiología is the discovery of, perhaps the brightest of its founders, Dr.

Eduardo Braun Menendez, a renal pressor substance which he called hipertensin. At the same time, Dr. Irving Page in Cleveland discovered the same substance and gave it the name of angiotonine. Meeting both researchers, published the famous paper in Science [1942, 958:127 (3292)] which received its current name: angiotensin.

Something similar happened in 1971 when Dr. William Kreutzer at Hospital de Niños de Buenos Aires operated on a patient with tricuspid atresia with a technique quite new, with which is established a new human circulation. At the same time, Dr. Fontan in France carried out another operation even though it had similarities with that of Kreutzer, he carried out it with different anatomic and hemodynamic concepts. This is clearly explained in the review article by William O. Kreutzer (1) that encourages this editorial commentary which shows that the proposed of Hopital de Niños was correct.

In the early nineteenth century, an unknown young German researcher, Grotefend, for the first time deciphered the Babylonian cuneiform writing, commitment in which other well-known professors had failed.

On this extraordinary discovery, C. W. Ceram (2) stated: "The main characteristic of genius is to see in a simple way which is complicated and recognize the ordering principle that basically every complex problem has. Grotefend' idea was of an amazing simplicity. "

I think, and speak in first person as someone who lived through that exciting time, that this is perfectly applicable to the Fontan-Kreutzer procedure.

BIBLIOGRAPHY

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