Aborted sudden death during sports activity due to anomalous origin of the left coronary artery from the pulmonary trunk - dilemmas concerning surgical repair of the anomaly

Latific-Jasnic D, Gabrijelcic T, Rakovec P
Ruzic-Medvescek N, Zorman D

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Anomalous origin of the left main coronary artery from the pulmonary trunk is a rare congenital anomaly. It has a dual natural history [1]: The majority of patients present in infancy with heart failure and echocardiographic signs of dilated cardiomyopathy, 90% of patients die within the first year of their life; the survivors who reach adult age, however, present with a systemic pulmonary fistula and have a risk of sudden death or congestive heart failure. Sudden death is often exercise-related but is usually not witnessed and seldom heralded by the presence of symptoms or signs [2]. The surgical methods of treatment extend from palliative to radical ones, heralded by the presence of symptoms or signs [2]. The surgical methods of treatment extend from palliative to radical ones; among the latter, direct reimplantation of left coronary artery origin and reimplantation into aorta initially seemed to be successful. Due to the slight twisting of the reimplanted artery, severe stenosis developed and subsequently, bilateral mammary artery anastomosis had to be performed.

**Case report**

A young woman with a previously undiagnosed coronary anomaly - the left main artery arising from the pulmonary trunk - survived ventricular fibrillation which occurred during physical activity (aerobics). A surgical procedure which included the excision of the left coronary artery origin and reimplantation into aorta initially seemed to be successful. Due to the slight twisting of the reimplanted artery, severe stenosis developed and subsequently, bilateral mammary artery anastomosis had to be performed.

**Key words:** coronary anomaly, sudden death, cardiovascular surgery

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From the Department of Cardiology and 1Department of Cardiovascular Surgery, University Medical Center, Ljubljana, Slovenia.
Correspondence to: Dr. P. Rakovec, Department of Cardiology, Zaloška 7, SI-1525 Ljubljana, Slovenia.
E-mail: peter.rakovec@excite.com
Comment

This patient of ours is a very rare case, in whom sudden arrhythmia, evidently cause of sudden death in patients with this anomaly, was witnessed. Exercise can be a trigger for fatal arrhythmia, however, some of these patients tolerate exercise quite well and without angina [4]. Therefore, foreseeing the onset of fatal arrhythmias can be unpredictable.

The evaluation of children with suspected congenital cardiac anomalies used to include cardiac catheterization, but not coronary angiography. In this way, coronary anomalies could not be discovered. We therefore feel that cardiac catheterization in children should be accompanied with coronary angiography in unclear and ambiguous cases. Echocardiography is also of great help by showing the dilated right coronary artery and is in some cases capable of leading to a correct diagnosis without invasive diagnostics [5]; nevertheless, coronary angiography should remain the principal diagnostic tool.

The reimplantation of the left coronary artery into aorta is probably the best surgical option if it can be technically performed without stretching or overtwisting the reimplanted artery [6]. Relatively good initial results can deteriorate with time, therefore careful follow-up is mandatory. In technically less favorable situations, either more sophisticated (eg, tunnel operation) or more conventional operations (eg, internal mammary anastomosis or bypass grafting), may yield better results [7].

References

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