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Sudden death due to congenital malformation of coronary arteries

J. Kunz

Institute of Forensic Medicine, Medical Academy, Grzegórzecka Strasse 16, 31–531, Cracow, Poland

Summary. A case of sudden death of a 12-year-old girl after jogging, due to congenital malformation of coronary arteries, is presented.

Key word: Sudden death, congenital malformations

Zusammenfassung. Dargestellt wird der Fall des plötzlichen Todes eines 12jährigen Mädchens nach einem 2-km-Lauf. Die Leichenöffnung ließ einen kongenitalen Entwicklungsfehler der Koronararterien sichtbar werden, die vorher keine Krankheitssymptome aufwiesen.

Schlüsselwort: plötzlicher Tod, kongenitale Entwicklungsfehler der Koronararterien

Introduction

Coronary arteries anomalies are not infrequent: Alexander and Griffith found 2.85 per 1000 autopsies [1]. These malformations affect either the anomalous origin of the coronary artery from vessels other than aorta [2] or instances in which both coronary arteries originate from the same sinus of Valsalva. Only very few fatal cases from the second group have been reported in the literature [3]. In this paper a case of sudden death during heavy exercises in a 12-year-old girl is reported.

Case Report

A 12-year-old girl, in apparently good health, without any previous symptoms of disease became comatose after 2 km of jogging. She showed severe dyspnoe and was declared dead on arrival in the emergency room of the rural hospital.

Postmortem Examination

The body of a well developed girl, no external signs of violence. The heart enlarged, left ventricular wall measured 12 mm in thickness as compared to 3 mm in the right ventricle. Both

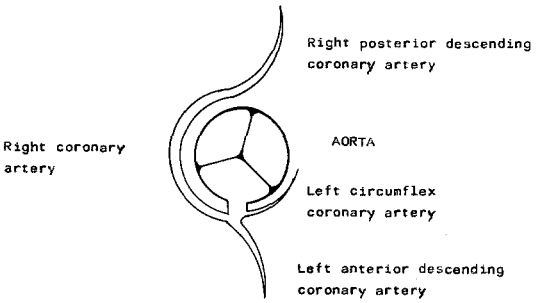

Fig. 1. Both coronary arteries originate from the anterior sinus of Valsalva. Note hypogenesis of left coronary artery branches

coronary arteries originated from the anterior sinus of Valsalva in form of one wide artery. Two centimeters below it divided up into normal right coronary artery and the left one, producing after passing 1 cm very narrow and short interventricular and circumflexus branches.

Extensive microscopic examinations revealed slight interstitial fibrosis and hypertrophy of myocardial fibres. In special staining (Nielsen method) multiple, dispersed eosinophilic nubles, mainly in interventricular sept and anterior wall were detected.

Discussion

In the above mentioned two main groups of coronary malformations only anomalous origin of the arteries from the vessels other than aorta (Bland-White-Garland syndrome) are of a great functional significance because of an insufficiency in the oxygen supply, expressing in myocardial hypoxia or infarction. The anomalies of the second group usually "clinically dumb" have been looked upon as variations with significance in connection with cardiac surgery only. Cheitlin et al. [4] presented a series in which nine of 33 people died suddenly, almost all in relation to physical exercises, without previous symptoms of disease. Schaumburg and Simonsen [3] in the presented case explained the mechanism of a sudden death due to squeezing the left coronary artery between two great vessels. In our case, a common arterial origin and evident hypogenesis of left coronary artery caused coronary insufficiency and sudden death.

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