LETTERS TO EDITOR

ABNORMAL RADIAL ARTERY IN DOWN SYNDROME: A RARE BUT CLINICALLY IMPORTANT ASSOCIATION

Sir,

Down syndrome (DS) is the most common chromosome disorder and the single most common genetic cause of moderate mental retardation.[1,2] Its incidence in live births is approximately 1 in 750.[1,2]

We report a 3-year-old boy with DS in whom radial artery pulsations were incidentally detected to be bilaterally absent. Bilateral ulnar artery and all other peripheral pulsations were normal. His blood pressure in right upper arm was normal, 96/66 mm Hg. Two-dimensional echocardiography was normal. Doppler ultrasonography of the arterial trunks of the upper limbs suggested normal ulnar artery waveforms up to the wrist joints and absent radial artery waveforms. Aortogram and bilateral upper limb angiography were performed. This revealed a vestigial right radial artery (absent except in proximal 3 cm) and a hypoplastic left radial artery [Figure 1]. The aortogram was normal and it did not reveal any associated arterial or venous malformations.

Anti-nuclear antibody titers and anti-double-stranded DNA titers were negative.

Per se, in human beings, anomalies of the radial artery are rare.[3] Even standard textbooks or a recent large case series of 524 children with DS does not mention this aberration.[1,2,4] A vestigial or hypoplastic radial artery in a child with DS

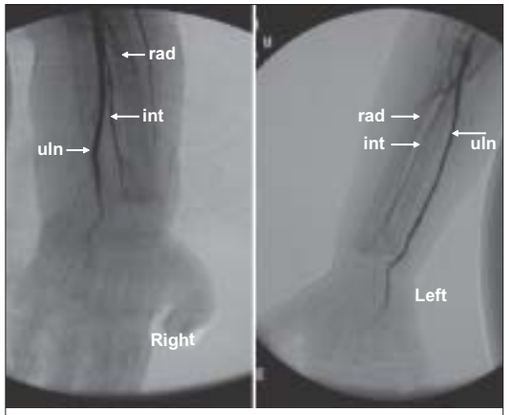

Figure 1: Bilateral upper limb angiography: A- vestigial right radial artery with hypertrophied right ulnar and interosseous arteries; B- hypoplastic left radial artery with hypertrophied left ulnar artery and normal interosseous artery [abbreviations: rad- radial, uln- ulnar, int- interosseous]

is of great clinical importance. Up to 40% of children with DS have congenital heart disease (atrioventricular septal defects, ventricular septal defects, isolated secundum atrial septal defects, patent ductus arteriosus, tetralogy of Fallot); and approximately 12% have gastrointestinal anomalies (duodenal/intestinal/anal atresia, Hirschsprung disease); which require surgical correction.[1,2] Percutaneous radial artery cannulation is commonly used for continuous monitoring of blood pressure and estimation of arterial blood gases during the perioperative period. In a child with DS, this radial anomaly should be carefully looked for and even ulnar cannulation avoided, to prevent compromise of the circulation to the hand. Lo *et al.* have earlier reported abnormal radial arterial patterns in 11 children with DS, of which 8 had an associated congenital heart disease.[5] However, none of these 11 children

had a vestigial radial artery on one limb with a hypoplastic radial artery on the other limb.[5]

A highly significant change in the survival of people with DS has occurred during the last two generations, with life expectancy estimates increasing to nearly 60 years of age.[6] In elderly people with DS, coronary artery disease has been reported to occur in up to 10% of cases.[6] In recent years, the transradial route is being increasingly used for coronary angiography and angioplasty, and the radial artery is gaining popularity as a bypass conduit for coronary artery bypass grafting.[7] In an elderly DS patient with coronary artery disease, radial artery anomaly should be carefully looked for to avoid unnecessary forearm exploration.

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