

Cerebrovascular and Brain Abnormalities in Autosomal- Dominant Polycystic Kidney Disease: Role of 3d Time-of- Flight Magnetic Resonance

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Abstract

Introduction: The association of intracranial aneurysms and autosomal-dominant polycystic kidney disease (ADPKD) is well recognized. The aim of this study was to assess the prevalence of asymptomatic intracranial aneurysms and to verify the presence of other cerebral abnormalities in patients with ADPKD by Magnetic Resonance Angiography screening.

Materials and methods: From January 2009 to September 2013, 56 patients with ADPKD (25 M, 31 F; mean age 40 years, range 24- 63 years) underwent brain Magnetic Resonance Imaging including 3D time-of-flight MR angiography and T2-weighted Turbo-Spin-Echo axial sequences. Magnetic Resonance studies were examined by two experienced neuroradiologists (20 years). If an intracranial aneurysm was detected, cerebral Computed Tomography Angiography was recommended and further action were discussed with the interventional neuroradiologist.

Results: Nine saccular intracranial aneurysms were detected in 56 patients, located in the anterior circulation (5 internal carotid arteries, 1 anterior communicating artery and 3 middle cerebral arteries). Four patients underwent endovascular treatment with flow-diverter devices. We additionally found internal carotid artery abnormal diameter and course (6), basilar artery hypoplasia (1), basilar artery dolichoectasia (1), asymmetric anterior cerebral (4) and vertebral (14) arteries, vascular anatomic variants (3), venous drainage anomaly (1), arachnoid cysts (6), large bilateral choroid plexus cysts (1) and mega cisterna magna (2).

Conclusions: The prevalence of asymptomatic intracranial aneurysms (16.1%), higher compared to the general population (1%) and similar to literature reports in autosomal dominant polycystic kidney disease (6-16%), confirmed the importance of the Magnetic Resonance Angiography screening in these patients.

Keywords

Polycystic kidney disease, Angiography; intracranial aneurysms; ADPKD