

Editorial

Approach of Hypertension in Autosomal Dominant Polycystic Kidney Disease

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EDITORIAL

In this Inaugural Issue of Annals of Clinical and Experimental Hypertension, we are interested by hypertension in autosomal dominant polycystic kidney disease (ADPKD).

ADPKD is the most common, life threatening single-gene disease. It affects over 12.5 million worldwide [1] and responsible of 5 – 10% of end-stage renal disease (ESRD) [2]. Hypertension is a common and serious complication of ADPKD, often occurring early in the disease before appearance of renal dysfunction [3]. Early and effective treatment of hypertension is very important to decrease the morbidity and mortality of ADPKD patients. Patients with ADPKD have an increased incidence of hypertension, left ventricular hypertrophy (LVH) and cardiovascular abnormalities [4]. The reported relative mortality rate in patients with ADPKD ranges between 1.6-fold [95% confidence interval (CI) 1.3-2.0] and 3.2-fold higher [95% CI 2-4.8] in comparison to the general population [5].

Hypertension occurs in approximately 60% of the patients with ADPKD before any decline of renal function [3]. Hypertension is circumstance of diagnosis of ADPKD in 30%. Therefore, discover of hypertension in a young patient warrant lumbar examination and renal ultrasonography screening.

Hypertension is associated with a faster progression to ESRD [6]. It has been demonstrated that better hypertension control leads to improvement in ADPKD outcomes [6]. However, cardiovascular disease still remains the main cause of death in ADPKD [7]. Also it has been demonstrated a significant decrease of kidney disease progression in ADPKD patients associated with attainment of better hypertension control and increased use of angiotensin converting enzyme inhibitors (ACEIs) [8]. Current published data confirm that patients with ADPKD in the United States [9], Denmark [10] and Great Britain [11] are having a better prognosis. There has been an earlier diagnosis, better control of blood pressure, more use of renin-angiotensin-aldosterone system (RAAS) inhibitors, better preservation of renal function, later onset of ESRD, and better survival. The improved survival

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no doubt involves factors in addition to the better control of blood pressure and preservation of renal function, and this issue therefore needs further study [9-11].

The pathogenesis of hypertension in ADPKD is complex and dependent on many factors that influence each other. Cyst growth, renal handling of sodium, activation of the RAAS, volume expansion, an elevated plasma volume, and increased plasma atrial natriuretic peptide and plasma endothelin levels have all been found to be associated with hypertension in ADPKD. Activation of the RAAS seems to have a major role in the pathogenesis of hypertension in ADPKD patients. Plasma renin activity and plasma aldosterone concentration are increased more in supine and upright positions in patients with ADPKD compared with patients with essential hypertension matched for age, sex, kidney function, sodium intake, and degree of hypertension [12]. All components of the RAAS system have been identified in kidneys from patients with ADPKD [13]. The question of whether treatment with either ACEIs and/or angiotensin receptor blockers (ARBs) is more effective on kidney disease progression in ADPKD will be answered by the HALT study [14]. This study is a prospective clinical interventional study for adult ADPKD patients. This study will test whether intensive blockade of the RAAS with combination of ACEI and ARB therapy will slow renal progression in ADPKD patients, compared with ACEI monotherapy alone. In addition, the study will test whether rigorous versus moderate hypertension control will be more effective in slowing kidney progression in this population.

In conclusion, Hypertension occurs early in ADPKD patients and before impairment of renal function. Hypertension is associated with a faster progression to ESRD and represents the most important potentially treatable factor in ADPKD. Hypertension plays also an important role in cardiovascular disease, which is the most frequent cause of death in ADPKD patients. Experimental and clinical data show that the RAAS is an important factor in the development of hypertension in ADPKD. Early and effective treatment of hypertension is very important to decrease the morbidity and mortality of ADPKD patients. Prospective randomized studies are needed to determine the

most appropriate agents for the treatment of hypertension in these patients.

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