



Original article

## Causes of secondary hypertension in the young population: A monocentric study

*Les causes d'hypertension artérielle secondaire chez l'adulte jeune : étude monocentrique*

C. Noilhan, M. Barigou\*, L. Bieler, J. Amar, B. Chamontin, B. Bouhanick

*Hypertension department, Cardiovascular and metabolic center, Rangueil University Hospital, Toulouse, France*

Received 13 April 2016; accepted 20 April 2016

Available online 18 May 2016

### Abstract

**Objective.** – To study the prevalence of different causes of hypertension in young adults referred to a hypertension center in the south west of France.

**Methods.** – We conducted a retrospective overview of patients younger than 40 years old hospitalized consecutively in the Hypertension department of Toulouse University Hospital between 2012 and 2014. Clinical data about gender, age, anthropomorphic parameters and blood pressure measurement by 24 h Ambulatory Blood Pressure Monitoring (ABPM) were recorded. Biological data concerned dosages of kalemia, renin and aldosterone in the supine or after 15 min of seating. Recorded radiological examinations were renal artery ultrasound and abdominal CT scan.

**Results.** – One hundred and forty-eight detailed medical records were analyzed, 69 women and 79 men. Among the 69 women, the causes of secondary hypertension were primary aldosteronism ( $n=7$ ), fibromuscular dysplasia ( $n=5$ ) and renal disease ( $n=4$ ). Oral contraceptives were involved in 13 women. In addition, essential hypertension concerned 40 women (58%). Among the 79 men, the causes of secondary hypertension were primary aldosteronism ( $n=10$ ), fibromuscular dysplasia ( $n=3$ ), left main renal artery entrapment by a diaphragmatic crura ( $n=2$ ), renal disease ( $n=1$ ), pheochromocytoma ( $n=3$ ) and coarctation of the aorta ( $n=2$ ). In addition, essential hypertension concerned 58 men (73%).

**Conclusions.** – In our population, the prevalence of secondary hypertension is close to 33% (42% of females and 27% of males), with the following main causes: primary aldosteronism for 11.5%; fibromuscular dysplasia for 5.4%. Oral contraceptives were involved in the hypertension of 19% of the females.

© 2016 Elsevier Masson SAS. All rights reserved.

**Keywords:** Young hypertension; Causes; Etiologies; Systolic blood pressure; Diastolic blood pressure; Primary aldosteronism; Secondary aldosteronism; Essential hypertension

### Résumé

**Objectifs.** – Étudier la prévalence des différentes causes d'hypertension artérielle secondaire dans une population d'adultes jeunes adressés à un centre d'excellence de l'hypertension artérielle.

**Méthodes.** – Étude rétrospective monocentrique observationnelle sur des patients âgés de moins de 40 ans hospitalisés dans le service d'hypertension du CHU de Toulouse entre 2012 et 2014. Les données cliniques recueillies étaient l'âge, l'IMC, la pression artérielle à la MAPA des 24 h. Les données biologiques étaient la mesure de la kaliémie et de la fonction rénale, des dosages hormonaux (rénine-aldostérone couchée ou 15 min assis). Les données radiologiques étaient l'échodoppler des artères rénales, les angioscanners des artères rénales.

\* Corresponding author. Cardiovascular and metabolic center, Rangueil University Hospital, 1, avenue du Professeur-Jean-Poulhès, TSA 50032, 31069, Toulouse cedex 9, France.

E-mail address: [med\\_barigou@yahoo.fr](mailto:med_barigou@yahoo.fr) (M. Barigou).

**Resultats.** – Cent quarante-huit dossiers ont été analysés, 69 femmes et 79 hommes. Parmi les 69 femmes, les causes d'HTA secondaire étaient l'hyperaldostéronisme primaire (HAP) ( $n = 7$ ), la dysplasie fibromusculaire (DFM) des artères rénales ( $n = 5$ ), une néphropathie ( $n = 4$ ). La prise d'une contraception œstroprogestative (COP) était impliquée chez 13 patientes. L'HTA était étiquetée essentielle dans 58 % cas ( $n = 40$ ). Concernant les 79 hommes, les causes d'HTA secondaire étaient l'HAP ( $n = 10$ ), la DFM des artères rénales ( $n = 3$ ), une sténose de l'artère rénale par compression du pilier du diaphragme ( $n = 2$ ), une néphropathie ( $n = 1$ ), une coarctation de l'aorte ( $n = 2$ ), un phéochromocytome ( $n = 3$ ). L'HTA est jugée essentielle dans 73 % des cas ( $n = 58$ ).

**Conclusion.** – Dans notre population de jeunes patients référés dans un centre d'excellence de l'hypertension, la prévalence de l'hypertension secondaire est proche de 33 % (42 % des femmes et 27 % des hommes). L'HAP était retrouvé chez 11,5 % des patients. La DFM des artères rénales expliquait 5,4 % des HTA et la COP était impliquée chez 19 % des patientes référées.

© 2016 Elsevier Masson SAS. Tous droits réservés.

**Mots clés :** Hypertension secondaire ; Jeune ; Prévalence ; Hyperaldostéronisme primaire ; Contraception œstroprogestative ; Dysplasie fibromusculaire

## 1. Introduction

Many studies showed an age-related increase in the prevalence of hypertension in the general population [1–3]. Isolated systolic hypertension is a frequent problem in the young adult population [4,5]. Current guidelines state that stage 1 isolated systolic hypertension in young adults could be probably related to a phenomenon of amplification of pulse pressure in this population. However, we could not conclude to this diagnosis until all secondary hypertension causes have been excluded. Indeed, the European Society of Hypertension and the European Society of Cardiology (ESH/ESC) recommend seeking for different etiologies of hypertension in patients younger than 40 years old, whatever was the degree of their hypertension [5,6]. Previous data issued from Excellence Hypertension Centers showed that the prevalence of secondary hypertension in the population of young hypertensive adults is close to 30%, while it is about 10% in the rest of hypertensive adult population [7]. Since many studies showed an increased cardiorenal risk in patients with secondary hypertension profiles, particularly those with primary aldosteronism (PA), and since the prevalence of secondary hypertension is increased in adults less than 40 years old, a thorough workup should be conducted in these patients to determine the most appropriate etiologic approach [4,8].

## 2. Objective

To determine the prevalence of different causes of hypertension in a young population of patients referred to an Excellence Hypertension Center in the south west of France (Toulouse University Hospital Center).

## 3. Methods

A retrospective overview of all medical records of patients younger than 40 years old was conducted. All of them were hospitalized in the department of hypertension of Toulouse University Hospital Center, between January 2012 and December 2014, with a diagnosis of hypertension based on ESH/ESC guidelines criteria [6], clinical data (age at admission and age at the diagnosis of hypertension, gender,

number of anti-hypertensive drugs before admission and after hospitalization, and anthropometric parameters (weight [kg], height [m] and BMI [ $\text{kg}/\text{m}^2$ ]) were recorded. Blood pressure was assessed using an ambulatory blood pressure monitoring (ABPM) (Spacelab's®). Normal BP values were defined as mean 24-hour-SBP/DBP < 130/80 mmHg, diurnal period SBP/DBP < 135/85 mmHg, and nocturnal period SBP/DBP < 120/70 mmHg based on ESH/ESC 2013 guidelines.

## 4. Biochemical determinations

Biological samples were collected.

### 4.1. Plasma electrolyte concentrations

Sodium and potassium levels, in millimole per liter (mM) at the admission were checked. Hypokalaemia was considered when kalemia was spontaneously less than 3.7 mM.

### 4.2. Renal function

We recorded plasma creatinine level, and glomerular filtration rate (eGFR) calculated by CKD-EPI method calculated in milliliter per minute per  $1.73 \text{ m}^2$  ( $\text{mL}/\text{min}/1.73 \text{ m}^2$ ). Stage 3-kidney disease was considered in patients with  $\text{eGFR} < 60 \text{ mL}/\text{min}/\text{m}^2$ . Electrolytes proteinuria and microalbuminuria were analyzed in a 24-hour or a one spot collected urines.

### 4.3. Plasma renin/angiotensin/aldosterone system (RAS) hormones

Plasma aldosterone concentration (PAC) was measured by Diasorin Liaison 8600 Radioimmunoassay (RIA) (normal range 40–175 pg/mL), direct renin concentration (DRC) by ISYS-IDS-chemiluminescent immunoassay (CLIA) (normal ranges: supine 4.2–49  $\mu\text{UI}/\text{mL}$ ; upright: 5.3–99  $\mu\text{UI}/\text{mL}$ ). Aldosterone and renin were sampled in the morning, at bed after an overnight supine position and/or after 15 min in seating position. As recommended, a minimum DRC value of 5  $\mu\text{UI}/\text{mL}$  was set to calculate the ARR. All drugs interacting with RAS were withdrawn for the exploration. The washout period depended on the

Download English Version:

<https://daneshyari.com/en/article/2868427>

Download Persian Version:

<https://daneshyari.com/article/2868427>

[Daneshyari.com](https://daneshyari.com)