Primary aldosteronism diagnosed in a patient with severe renal disease

Hyperaldostéronisme primaire diagnostiqué au stade d'hémodialyse

Meriam Hajji [1], Lamia Rais [2], Rania Kheder [2], Hela Jebali [2], Lilia Ben Fatma [2], Mohammed Karim Zouaghi [2]

1-Service de médecine interne A -Hôpital Charles Nicolle / Faculté de médecine de Tunis,
2-Service de Néphrologie -Hôpital La Rabta / Faculté de médecine de Tunis,

RÉSUMÉ

Bien que l'hyperaldostéronisme primaire soit considéré rare, il constitue l'une des causes les plus fréquentes d'hypertension artérielle (HTA) secondaire. Basé sur des données plus anciennes, il a été estimé que l'aldostéronisme primaire représentait moins de 1% de tous les patients souffrant d'HTA. Les données ultérieures, cependant, ont indiqué qu'il peut être retrouvé chez 5 à 15% des patients souffrant d'HTA. Nous présentons l'observation d'un patient âgé de 66 ans suivi pour HTA chez qui le diagnostic d'hyperaldostéronisme primaire a été posé au moment ou il a développé une insuffisance rénale sévère secondaire à une néphroangiosclérose. Ce case report, illustre les difficultés diagnostiques rencontrées au cours de l'hyperaldostéronisme primaire, et met en evidence l'impact du délai diagnostique sur la survie des patients mais aussi sur leur qualité de vie.

Mots-clés

hypertension sévère, hyperaldosteronisme primaire, insuffisance rénale, hémodialyse

SUMMARY

Although initially considered a rarity, primary aldosteronism now is one of the more common causes of secondary hypertension. Based on older data, it was originally estimated that primary aldosteronism accounted for less than 1% of all patients with hypertension. Subsequent data, however, indicated that it may actually occur in as many as 5-15% of patients with hypertension. Here we present a 66-year-old patient with a history of hypertension who was diagnosed with primary hyperaldosteronism at the time he had developed a severe renal failure secondary to a vascular nephropathy. This case report illustrates the difficulties in diagnosis of primary hyperaldosteronism, and highlights the effects of the delay of diagnosis on renal survival and on patient quality of life.

Key-words

Severe Hypertension, Primary Aldosteronism, Renal Failure, Hemodialysis.

Primary aldosteronism (PA) is a condition well worth detecting because it is the major cause of severe and resistant hypertension (HT) and is associated with excessive morbidity and reduced quality of life. IT can be abrogated with specific surgical or medical treatment [1,2]. Recent years have seen an explosion in knowledge of this disorder [3]. In this report, we present a patient treated at our center and review the existing knowledge on primary hyperaldosteronism, the difficulties in diagnosis, treatment modalities, and prognosis.

CASE REPORT

A 66-year-old male patient had been seen at our nephrology department since 2012 for renal failure attributed to a vascular nephropathy. HT had been discovered at the age of 55 years old and had required multiple anti-hypertensive therapies, which included furosemid, prazosine, nebivolol, moxonidine, and amlodipine. Physical examination on admission, revealed an asthenic patient, blood pressure of 220/120 mm Hg, pulse rate of 77 beats/min, and edema of the lower members. His diuresis was conserved. Dip sticks showed moderate proteinuria and no hematuria. The results of examination of the heart and lungs were unremarkable. Ambulatory blood pressure monitoring was performed, showing a severe HT profile (Figure 1).

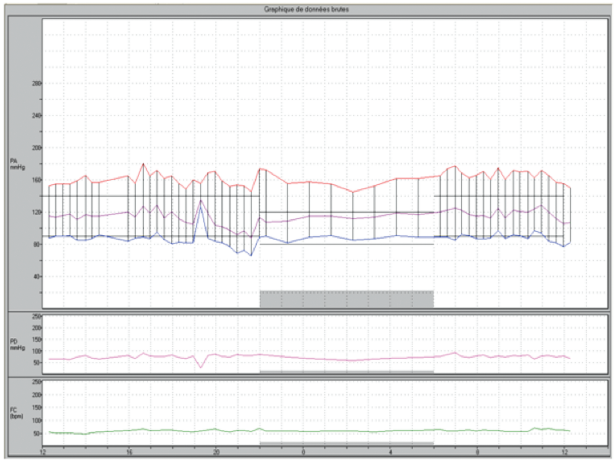

Figure 1: Ambulatory blood pressure monitoring showing a severe hypertension profile.

Ophthalmologic exam showed hypertensive stage3. Heart ultrasound revealed moderate left ventricular hypertrophy and a left ventricular ejection fraction 54%. Laboratory findings showed a 24 hours proteinuria at 2.1 g, protidemia at 69 g/l, and albuminimea at 39 g/l, renal failure with a serum creatinine level at 30 mg/l (creatinine MDRD clearance at 17 ml/min), serum potassium at 3,1 mmol/l, serum calcium at 90 g/l, Bicarbonatemia at 18 mmol/l, and hemoglobin level at 12,2 g/dl. Renal artery doppler was performed, showing the absence of direct evidence of renal artery stenosis with a resistance index <70% (Figure 2). Abdominal ultrasound revealed small kidneys, enlarged adrenal glands with a probable left adrenal nodule (Figure 2). Determination of metanephrine was normal. Serum aldosterone level (standing) was at 1188 pmol/l, (lying down) at 802 pmol/l, serum renin level was 4.14 mUI/l with an aldosterone / renin ratio at 193.5 confirming the existence of a primary hyper aldosteronism. Abdominal MRI showed a right adrenal hyperplasia and left adrenal adenoma (Figure 3). PA diagnosis was made at this time point, and he was treated with Spironolactone, which was first introduced in November 2013, with a strict monitoring of serum potassium with a relative stabilization of blood pressure measures. Preparation for chronic hemodialysis was started in September 2013.The patient was treated with hemodialysis since November 2013 at 3 times per week.

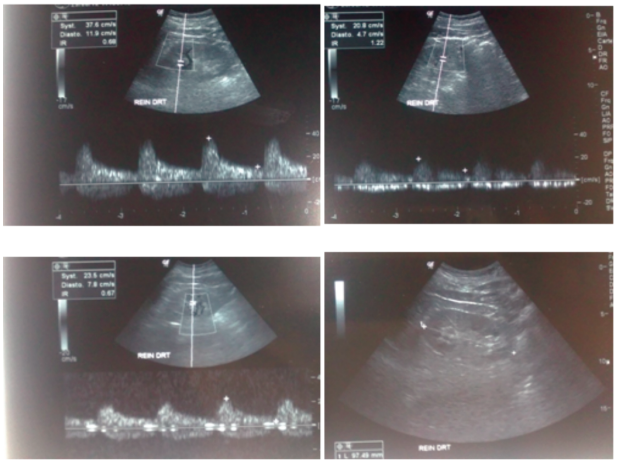

Figure 2: Renal artery doppler and renal ultrasound showing the absence renal artery stenosis and small kidneys.

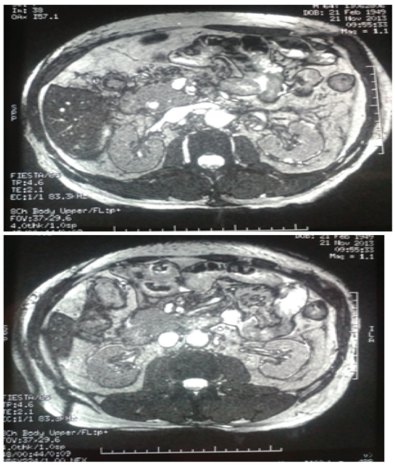

Figure 3: Right adrenal hyperplasia and left adrenal adenoma at abdominal MRI.

DISCUSSION

Our patient was diagnosed mistankely with essential hypertension, at an advanced stage, when it had already affected the kidneys and other target organs. The diagnosis of PA was made tardily, which should alert us to the necessity of early detection of PA, in order to avoid such pejorative outcome. It is recommended to detect PA by determining the aldosterone-renin ratio (ARR) under standard conditions, and that a commonly used confirmatory test should confirm this condition, for high-risk groups of hypertensive patients and those with hypokalemia [4]. It is a diagnosis that is usually made in patients who are in the third to sixth decade of life [5]. There are no specific symptoms. Patients with marked hypokalaemia may have muscle weakness and cramping, headaches, palpitations, polydipsia, polyuria, nocturia. The degree of hypertension is usually moderate to severe and may be resistant to usual pharmacological treatments [6]. We define resistant hypertension if uncontrolled on three conventional antihypertensive drugs, including a diuretic, or controlled on four or more antihypertensive drugs [100], and that was the case in our patient. The findings of a high prevalence of PA in patients with severe and resistant hypertension, is consistent with long-standing observations [9-14]. Not only hypertension is harmfull, but also excessive secretion of aldosterone is associated with an increased risk of cardiovascular disease and other disorders [7,8]. Some experts recommend screening all hypertensive patients for PA. However, given the costs and false-positive assessments, it seems more reasonable to reserve diagnostic evaluation for patients who are at increased risk [15]. In fact, It is recommended that screening, should be limited to patients who present with hypokalemia, and/or patients with severe or resistant hypertension [16,100]. However, identifying this risk group is not always the case, like in our cases, in spite the presence of this resistant hypertension, he was not diagnosed on time. In addition, our patient had hypokalemia, in spite of his severe renal failure and the treatment based on renin angiotensin system Blocker, which normally induce hyperkalemia. An elevated ARR is an effective screen confirmatory test having a high negative predictive value [10,17,18]. In a study by Mamhud et al. and in another separate analysis [19,20], the use of spironolactone was significatively associated with a BP reduction. However, in our patient, the treatment with spironolactone was not totally effective, and was risky considering his chronic kidney disease with a high risk of hyperkalemia. This can be explained by the diagnosis delay and the onset of renal failure due to probable vascular nephropathy. In this population, it is recommended to initiate treatment with reduced doses of the aldosterone antagonist and assessment of serum potassium levels as soon as 1 weak of starting treatment [20]. In conclusion, significant renal impairment was revealed after surgery in patients with PA. In another study of Kim DH et al. old age, long-standing hypertension, low levels of serum potassium, low BMI, and high levels of serum uric acid or cholesterol are considered as risk factors for post operative renal impairment and/or chronic kidney disease development in patients with PA [21].

CONCLUSION

PA is a considerable diagnostic challenge. Recognizing this condition, is essential because PA associated hypertension can often be cured. Screening with the ARR should include a larger group of patients with a high suspicion of PA based on clinical and biological findings. Any delay in diagnosing this disorder, may expose the patient at the risk of an accelerated developement of the entire spectrum of hypertension complications including hypertensive nephropathy and retinopathy.

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