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Research Article

FREQUENCY OF PRIMARY HYPERALDOSTERONISM IN YOUNG HYPERTENSIVES

¹Dr. Maryam Babar, ²Rimsha Syed, ³Dr. Tashfeen Javed

¹Lahore General Hospital, E-mail:- maryamabar786@gmail.com

²Final Year Medical Student, Shifa College Of Medicine/Shifa International Hospital,
Islamabad, E-mail:- rimshasyed952@yahoo.com

³House Officer Fouji Foundation Hospital, Islamabad, E-mail:- tashcool111777@gmail.com

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Abstract:

Introduction: Hypertension is a common disease affecting about 20% of the adult population. Although a great deal is known about the regulation of blood pressure, a specific causal abnormality can be found in only a small percentage of patients. **Aims and objectives:** The main objective of the study is to assess the frequency of primary hyperaldosteronism in young hypertensives. **Material and methods:** This cross-sectional study was conducted in LGH during October 2019 to March 2020. The data was collected from 100 hypertensive patients. They were considered hypertensives if their diastolic blood pressure was more than 90 mm Hg and the systolic blood pressure more than 140 mm Hg on at least 3 occasions on different days and without taking any antihypertensive medication or estrogen replacement. **Results:** The data were collected from 100 patients. The mean age of hypertensive patients was 54.1 ± 11.2 years and normotensive patients were 52.5 ± 7.3 . There were no significant differences in medical history, blood pressure, or measured biochemical variables between patients with a positive or negative fludrocortisone suppression test. The hypertensive patients showed higher levels of SA and SA/PRA ratio than the normotensives. The levels of urinary sodium excretion were similar in hypertensives and normotensives. **Conclusion:** It is concluded that the ARR could be used as a screening tool for PA in newly diagnosed patients with hypertension, although the possibility to diagnose patients can be expected to be higher in selected patient groups.

Corresponding author:**Dr. Maryam Babar,**

Lahore General Hospital,

E-mail:- maryamabar786@gmail.com

QR code



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INTRODUCTION:

Hypertension is a common disease affecting about 20% of the adult population. Although a great deal is known about the regulation of blood pressure, a specific causal abnormality can be found in only a small percentage of patients. Thus, about 95% of patients with hypertension are said to have essential or idiopathic hypertension [1]. A key mechanism in the regulation of blood pressure is the renin-angiotensin-system. Angiotensin II is the most potent stimulus to aldosterone synthesis, which, in turn, controls sodium and water excretion. Low levels of plasma renin activity (PRA) are found frequently in essential hypertension (EH), but the significance of low-renin hypertension and the mechanisms involved remain controversial [2]. A survey of 436 Japanese patients with EH showed that 12.4% had low PRA values with normal or high serum aldosterone (SA) levels, suggesting a persistent mineralocorticoid synthesis in the presence of minimal stimulation from the renin-angiotensin system [3].

Hypertension affects up to 25% of the adult population in Sweden. Primary aldosteronism (PA) is a common form of secondary hypertension, characterized by excessive aldosterone secretion and renin suppression, followed by hypertension, alkalosis and hypokalemia. The latter is, however, not necessarily an integral element [4]. Resistant hypertension requiring more than three antihypertensive drugs, hypertension diagnosed at a young age, or family history of stroke at a young age are factors that suggest the possibility of PA. PA arises from one or both adrenal glands [5]. However, the quoted prevalence of primary aldosteronism (PA) is usually cited as being less than 1% for an unselected hypertensive population (6–9). Recently, Gordon *et al.* (10) presented evidence that PA may not be uncommon and demonstrated an incidence up to 12% of PA when determinations of SA, PRA, and the SA/PRA ratio are used in the diagnosis. They also found that hypokalemia is present only in the more severe form of the disease and that most patients with PA are normokalemic [6].

Aims and objectives

The main objective of the study is to assess the frequency of primary hyperaldosteronism in young hypertensives.

MATERIAL AND METHODS:

This cross-sectional study was conducted LGH during October 2019 to March 2020. The data was collected from 100 hypertensive patients. They were considered hypertensives if their diastolic blood pressure was more than 90 mm Hg and the systolic blood pressure more than 140 mm Hg on at least 3 occasions on different days and without taking any antihypertensive medication or estrogen replacement. The diagnosis of hypertension was confirmed by ambulatory 24-hour blood pressure measurement or by three high blood pressure records (>140/90). The patients' medical history was recorded, including heredity, current medication, and diseases. A physical examination of the patient was performed by the attending physician. Plasma and serum were frozen at -20°C , with the exception of samples for sodium, potassium, and creatinine, which were analysed the same day on a routine auto-analyzer.

Statistical analysis

The data were collected and analysed using SPSS version 21.0. All the values were expressed in mean and standard deviation.

RESULTS:

The data were collected from 100 patients. The mean age of hypertensive patients was 54.1 ± 11.2 years and normotensive patients were 52.5 ± 7.3 . There were no significant differences in medical history, blood pressure, or measured biochemical variables between patients with a positive or negative fludrocortisone suppression test. The hypertensive patients showed higher levels of SA and SA/PRA ratio than the normotensives. The levels of urinary sodium excretion were similar in hypertensives and normotensives.

Table 01: Biochemical variables and analysis of patients

Parameter	Hypertensives	Normotensives	P value
Age (yr)	54.1 ± 11.2	52.5 ± 7.3	NS
Blood pressure (mm Hg)			
Systolic	161.3 ± 17.1	117.6 ± 11.3	<0.01
Diastolic	97.2 ± 10.5	71.2 ± 8.3	<0.01
SA (ng/dL)	11.91 ± 7.8	8.64 ± 4.61	<0.01
PRA (ng/mL·h)	2.58 ± 5.73	1.36 ± 0.87	<0.01
SA/PRA ratio	16.9 ± 33.7	9.06 ± 7.48	<0.01
UNa (mEq/24 h)	165 ± 40	170 ± 48	NS

DISCUSSION:

The frequency of PA found in our study is clearly higher than that classically described, and it confirms reports of a significant high incidence of PA in patients with EH when determinations of SA, PRA, and SA/PRA ratio are used as screening. Screening patients with hypertension for PA has usually been limited to those who presented with unprovoked or easily induced hypokalemia [7]; our patients with PA were normokalemic and could not have been diagnosed if the screening was done using these criteria. These results support the hypothesis that normokalemic PA constitutes the most common presentation of the disease, and the hypokalemic variant probably represents only the most severe cases [8]. The present high frequency of PA is in accordance with the reported 5–10% prevalence of PA in studies from specialized centres and our earlier study. The prevalence of PH may be as high as 20% in patients with resistant hypertension, and in about half of these patients it may be potentially curable, there being a unilateral aldosterone producing adrenal adenoma [9]. A local study in Hong Kong confirmed that surgical excision of an adrenal adenoma can cure hypokalaemia in all cases and can cure persistent hypertension in 77% of patients. The procedure was also proven to be cost-effective in the long run [10].

CONCLUSION:

It is concluded that the ARR could be used as a screening tool for PA in newly diagnosed patients with hypertension, although the possibility to diagnose patients can be expected to be higher in selected patient groups. Dexamethasone suppresses SA in many patients with PA and, thus, is very unspecific in the identification of patients with chimeric gene.

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