Study On The Relationship Between Potasium /Sodium Levels and Antihypertensive Diuretic Doses in Hypertensive Patients Monitoring by Cardilogy Clinics

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INTRODUCTION

Hypertension is considered one of the world's most important health problems and a major risk factor for cardiovascular morbidity and mortality. The ultimate goal of antihypertensive therapy is to reduce cardiovascular morbidity and mortality.
In the treatment of hypertension, therapy are maintained with different group of drugs such as, Diuretics, B-Blockers, CCBs, ARBs and ACEIs were in the form of mono or combination. One of the first group in the treatment of hypertension that comes to mind is diuretics. One of the main problems encountered in the continued treatment with diuretics is imbalance of electrolytes, especially the fall of the Na and K levels. The protection of the electrolyte level is important for the healthy functioning of the cardiovascular system.

MATERIALS & METHODS

Study was conducted as data collection and evaluation of results together with clinical specialists in Ankara University, Faculty of Medicine, İbni Sina Hospital, Cardiology Clinic. 51 patients who signed the informed consent form were included in this study. Study was carried out by ;
- Patient Tracking Form and
- Kidney function tests which was carried out for each patient routinely for the forfollow-up test.

In the study, the monitoring and the evaluation of the relation between the changing electrolyte, especially potassium / sodium levels, and the dose of diuretic antihypertensive in the hypertensive patients starting diuretic antihypertensive drugs who were followed by cardiology clinics, has been done.
Statistical analysis of the data obtained was performed with SPSS 11.5 program. In terms of averages between two groups evaluated by Student's t test and Mann Whitney U test. Nominal variables were evaluated by paired t-test.
p value of < 0.05 were considered statistically significant.

Results

In our study, 51 hypertensive patients were included and 27 of these were women and 24 men.

Table1.1.Demographic Characteristics of the patients

	n=51	(%)
Age		
Min.	29,0	-
Maks.	77,0	-
smoking		
Yes	12	23,5
No	30	58,8
Quitsmoking	9	17,6
Duration of Hypertension		
New(< 1 year)	36	70,6
Old (≥ 1 year)	15	29,4
The existing diseases		
Hyperlipidemia	19	37,3
Diabetes Mellitus	13	25,5
Coronary Artery Disease	9	17,6

Table1.2. Antihypertensive Drug Groups During the treatment of patients

Treatment	n	(%)
*ACEİ + Diüretic	32	(52,8)
*ARB + Diüretic	16	(31,4)
Combine + Calcium canal blocker	2	(4)
Combine + Beta Blocker	1	(2)

*ACEİ: Anjiotensin converting enzyme inhibitor
*ARB: Anjiotensin receptor blocker

Table1.3. Diuretics distribution in the fixed dose combination used by patients enrolled in the study.

	dose(mg)	n=51	(%)
Hydrochlorothiazide	12,5	21	41,2
	25	9	17,6
İndapamide	1,25	16	31,4
	2,5	5	9,8

Since they are cheaper, effective and safe, diüretics are preferable drugs in long term treatment of hypertension.
The combination treatment modalities preferred in order to to make more efficient the treatment and to protect themselves from potential side effects. Accordingly, the fixed-dose combination therapy including hydrochlorothiazide and indapamide were used for the patients participating in this study.

Table1.4. Effect of fixed-dose combinations of diuretics on electrolytes and kidney function values, independently.

		(Baseline) (mean ± stddeviation)	Control (mean ± stddeviation)
Hydrochlorothiazide	Creatinine	0,79 ± 0,20	0,81 ± 0,24
	BUN	11,86 ± 3,35	13,1 ± 3,43
	Potassium(K)	4,3 ± 0,40	4,2 ± 0,34
	Soduim (Na)	138,45 ± 2,1	138,13 ± 1,79
İndapamide	Creatinine	0,77 ± 0,16	0,78 ± 0,15
	BUN	12,1 ± 2,91	12,66 ± 3,99
	Potassium(K)	4,2 ± 0,40	4,1 ± 0,44
	Sodium (Na)	138,62 ± 1,77	138,38 ± 2,39

(Table 1.5) Depending on the dose of diuretics Δ change in sodium (Na) values showed a declining trend. However, no significant difference has been determined on the calculated p value (p> 0.05).
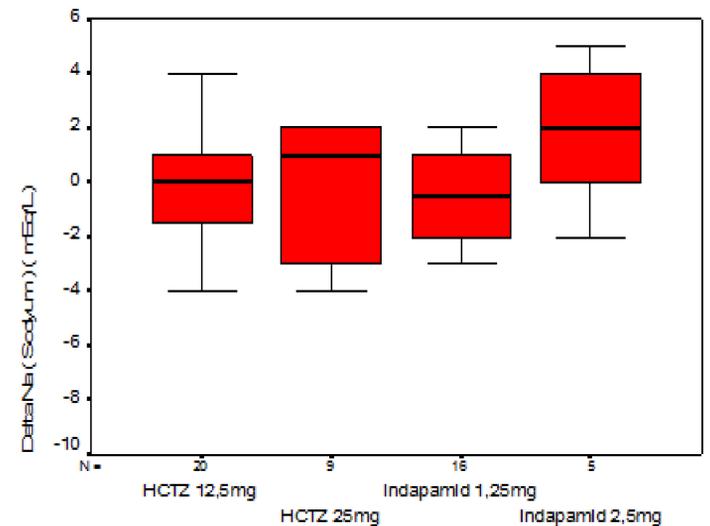

Table1.5. During treatment dose diuretics and sodium changes

When the effect depends on the dose of diuretic used in the treatment was examined and comparison between the doses was done, K value has showed a tendency of fall close to the border area in patient staking 25 mg Hydrochlorothiazide. However, no significant difference has been determined (p = 0.081). Eventhough there was a slope of hypo kalemia with rising the dose of HCTZ, this has not reached statistically the significant value.
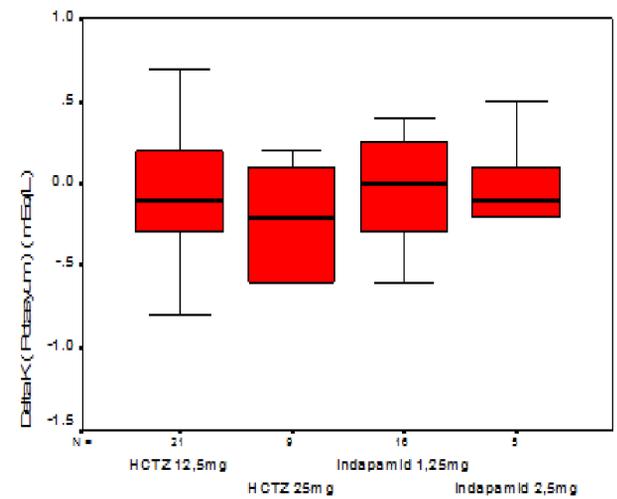

Table1.6. During treatment dose diuretics and potassium changes

DISCUSSION & SUMMARY

In our study, we show that with the usage of the diuretic combination drugs which are available on the market in Turkey, there is no significant change in the electrolyte levels at the end of thetreatment period about a month. In patients, with the rise of HCTZ dose, it did not reach statistically significant levels even if there is a hypokalemia tendency. Therefore, it can be said that antihypertensive combinations containing diuretics can be use dsafely, in the short terms. But it could still be considered that electrolyte disturbances can be obvious with the increase in the dose of diuretics. In this regard, clinical pharmacist and the doctors who follows the patients must be careful about the situation.