CHRONOPHARMACOLOGY IN THE MANAGEMENT OF HYPERTENSION

Deborah Cassar, Lilian M. Azzopardi, Anthony Serracino-Inglott

University of Malta

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, MALTA
lilian.m.azzopardi@um.edu.mt

INTRODUCTION

Chronotherapeutic aspects of antihypertensives allow for adopting management of hypertension based on the medication used and the patient's background.[1] Different types of hypertension lead to different patterns in the variation of hypertension with time, however the most critical periods in hypertensive patients are the early morning and night time period.

AIMS

- **To test the effect of perindopril and valsartan on the 24 hour blood pressure profile**
- **To compare the effects of morning vs evening dosing on circadian blood pressure**

METHOD

- **Patients (420) attending the Medical Out Patient's department of Mater Dei Hospital were screened for eligibility to participate in the study as group 1 and group 2 patients.**
- **Patients were classified into three groups: Group 1 patients taking either valsartan (5) or perindopril (10), Group 2 patients suffered from primary hypertension but were receiving no drug therapy (7), Group 3 patients were normotensive control patients (5).**
- **The study was approved by the University of Malta Research Ethics Committee.**
- **All patients had their 24 hour blood pressure profile measured using an ambulatory blood pressure monitor.**
- **For patients receiving perindopril and valsartan the 24 hour ABPM monitor was conducted on two occassions, 7 days apart.**
- **Patients were asked to change time of dose of medication for the second measurement for a week.**
- **Statistical analysis was undertaken using SPSS where the Mann-Whitney test was performed.**

RESULTS

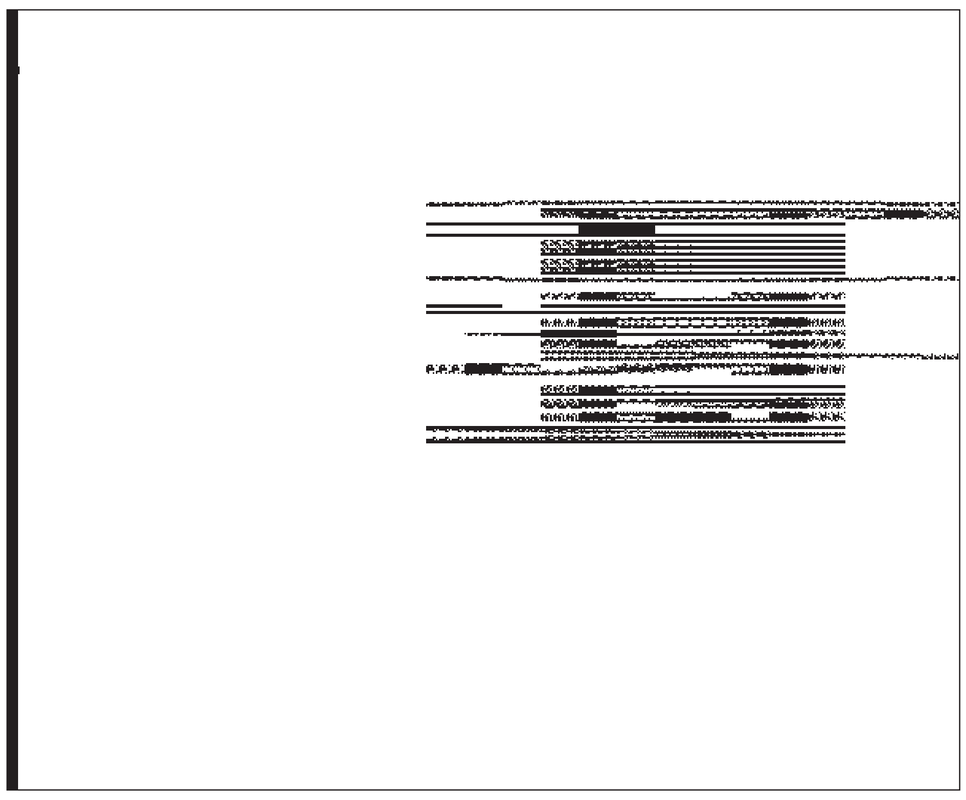

Figure 1: 24h Systolic blood pressure readings Morning vs Evening administration of perindopril (n=10)

Systolic blood pressure after morning administration with perindopril was significantly lower during the day time period (0800h-2000h) as opposed to night time period (2000h-0800h) (p=0.03) After morning administration, systolic blood pressure was significantly lower (122 mmHg) than after evening administration (126 mmHg) (p=0.029).

Figure 2: 24h Systolic blood pressure readings Morning vs Evening administration of valsartan (n=5)

For valsartan a morning administration resulted in lower systolic blood pressure for the three time periods studied (early morning- 0600h-1000h, day time and night time) (p<0.006). This trend is important especially during the critical early morning period where a surge in blood pressure normally occurs.

CONCLUSION

Morning administration of perindopril is preferred to evening administration since the latter did not result in optimum 24 hour blood pressure control. However the morning administration led to high blood pressure values during the early morning period (0600-1000h). This is significant for patients who are at higher risk of developing cardiovascular accidents in the morning due to other co-morbidities. For valsartan, morning administration compared to evening administration resulted in a controlled blood pressure over the whole day period.

Reference

1. Pizzuto M, Portelli J, Serracino-Inglott A, Zarb-Adami M, Azzopardi LM. Chronopharmacology of antihypertensives. Journal of Applied Therapeutic Research 2010; 7(4): 133-140.