encourage diversity in the student's approach to clinical problems and help them to better understand the complexities of the health care system in which they will be working.

Correspondence T Ryan
Erinville Maternity Hospital, Department of Paediatrics & Child Health
Western Road Cork.
Tel 35321 4921535
Fax 35321 4921569
Email Tony.Ryan@mailp.hse.ie ryant01@eircom.net

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The RAMBLER Study: The Role of Ambulatory Blood Pressure measurement in routine clinical practice: A cross-sectional study

G Ni Uallachain, G Murphy, G Avalos,
Department of General Practice NUI Galway

Abstract
Ambulatory blood pressure measurement (ABPM) is a useful and important way of guiding clinical decisions in the diagnosis and treatment of hypertension. There has been little research on how ABPM is actually used in the community where hypertension is mainly diagnosed and managed. We aimed to review the use of ABPM in daily community practice in terms of patient demographics, changes in pharmaceutical treatment and the proportion of patients achieving recommended levels. Six practices using the dabl® device for ABPM participated in this cross-sectional study. Patients who had the ABPM performed over the preceding 12 months were included. We recorded demographic details, pre- and post-ABPM clinic blood pressure measurements, the ABPM result and treatment before and after the test. 381 patients were included in the study, of whom 38.6% were male. The mean age was 58 years (SD=14) and 46.7% were GMS eligible. 33.8% had a normal BP result on ABPM. There was a statistically significant reduction in both the mean systolic pressure(10.4 mmHg, CI 7.2-12.9, P<0.001) and diastolic pressure (5.1mmHg, CI 3.2-6.6, P< 0.05) between the pre and the post-ABPM clinic measurements. It was found that 38.1% had a change in their medication after the test, with 31.7% having a new medication started. This pragmatic study provides information about the use of ABPM in routine general practice in Ireland. ABPM readings appear to have an impact on General Practitioners' decision- making and on the medical management of hypertensive patients in the community.

Introduction

Ambulatory blood pressure measurement (ABPM) has evolved over the past three decades from being primarily a research device to becoming an increasingly useful and important tool in the diagnosis and management of hypertension.[1] It has numerous advantages over clinic blood pressure measurement (CBPM) such as improved precision and reproducibility of results, the elimination of observer bias and errors, the assessment of white coat hypertension and the detection of non-dippers.[2] It also has been shown in longitudinal studies to have a better correlation with target organ damage than CBPM.[3-6] According to several long-term outcome studies, ABPM is a stronger predictor of cardiovascular morbidity and mortality than CBPM.[7-10]

Most of the work in the field of ABPM however has been done in research and specialist centres. There has been relatively little research on how ABPM is being used in the community, where hypertension is mainly diagnosed and managed. Pragmatic trials evaluate the effects of health service interventions under the human, financial and logistic constraints of typical, real world situations[11]. They are therefore important in determining the real expected returns in terms of effectiveness rather than efficacy (as usual explanatory trials do). We conducted this pragmatic, cross-sectional study to look at the use of ABPM and the associated implications of such use in routine general practice in the West of Ireland. Our specific aims were to describe patient demographics; to look at the confirmation, or not, of the diagnosis of hypertension; to describe the changes in

Table 1 Definitions used in dabl ABPM reports

	Normal	Borderline	Mild	Moderate	Severe
Daytime					
SBP	130-135	136-140	141-155	156-170	>170
DBP	65-85	86-90	91-100	101-110	>110
Night-time					
SBP	91-120	121-125	126-135	136-150	>150
NBP	51-70	71-75	76-85	86-100	>100

Table 2 British Hypertension Society/ European Society of Hypertension guidelines for clinic BP levels

	Systolic	Diastolic
Optimal	<120	<80
Normal	120-129	80-84
High normal	130-139	85-89
Mild (Grade I)	140-159	90-99
Moderate (Grade II)	160-179	100-109
Severe (Grade III)	>180	>110

Table 3 Clinic Blood Pressure readings before ABPM

Blood Pressure Category	n	%
Normal	20	5
High normal	24	7
Mild Hypertension	115	31
Moderate Hypertension	148	41
Severe Hypertension	58	16
Total	365	100

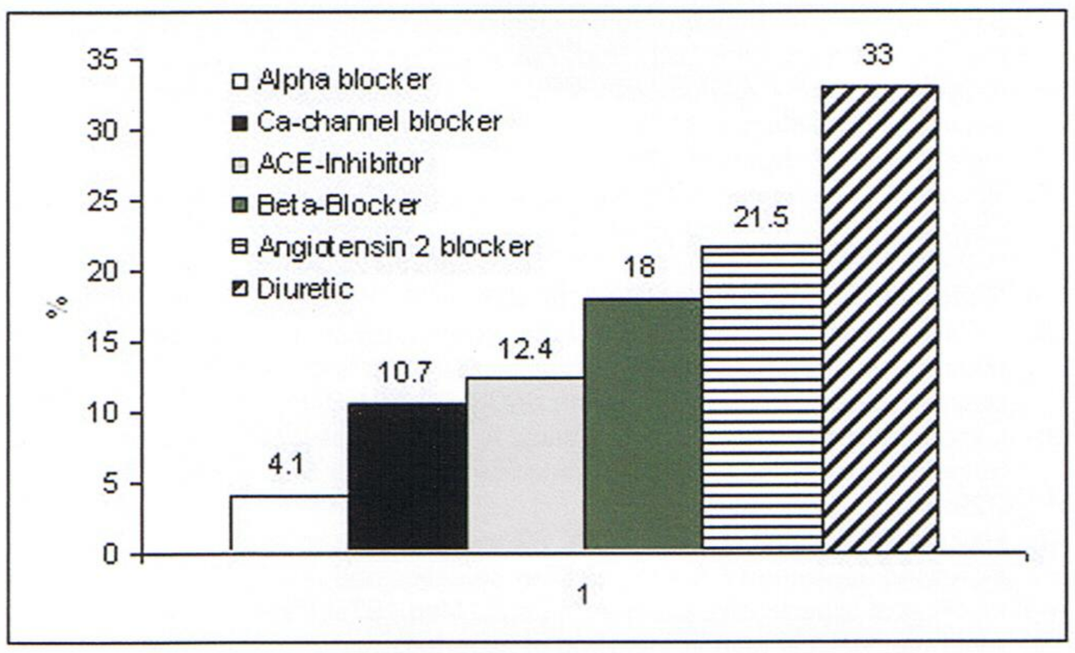
Table 4 ABPM results

Blood Pressure Category	n	%
Normal	78	20
Borderline	69	18
Mild Hypertension	132	35
Moderate Hypertension	79	21
Severe Hypertension	23	6
Total	381	100

Table 5 Clinic Blood Pressure readings after ABPM

Blood Pressure Category	n	%
Normal	26	11
High normal	34	15
Mild Hypertension	107	46
Moderate Hypertension	49	21
Severe Hypertension	17	7
Total	233	100

Figure 1: New medication commenced (n= 121)



pharmaceutical management; and to determine the proportions of patients achieving recommended target levels in those patients undergoing ABPM.

Methods:

A convenience sample of six practices in the West of Ireland participated in this cross-sectional study. Practices were recruited based on the fact that they were using dabl® software, which is a software package for the management, interpretation and reporting of 24-hour Ambulatory Blood Pressure Measurement. Developed in conjunction with the Blood Pressure unit and ADAPT Centre in Beaumont hospital, Dublin, dabl® is a 24-hour ABPM reporting system that produces a standardized plot and interpretative text report, supporting only validated monitors.[12]

Ethical approval was obtained from the Irish College of General Practitioners. Patients were notified by a poster in the waiting rooms of the practices and the requirements of the Irish Data Protection Act (1998 and 2003) were fulfilled by the researcher signing both a confidentiality agreement and an agent nomination form in each of the practices.

All patients who had a single ABPM done during the 12 month period from June 2004 to June 2005 were included in the study. Patients were subsequently excluded if they had less than 12 hours of data recorded, if their ABPM results were unavailable or if there was no other data available in their medical records.

Data was collected from patient records which included a combination of paper records and computerised charts. Relevant categories studied included age, gender, GMS eligibility, pre-test and post-test clinic blood pressure readings, medications and changes in medications, relevant risk factors and the ABPM result. Blood pressure categories were assigned according to the European and British Hypertension Society guidelines. (Table 1 represents the categories for ambulatory measurements; Table 2 represents the categories for clinic blood pressure measurements).[13-15] All data was anonymised. The data was then analysed using SPSS statistical package Version 12.0.

Results

425 patients had a single 24 hour ABPM test done in the 12 month period specified. 44 patients were subsequently excluded (blank dabl recording n=9; charts missing or no other data in records n=13; less than 12 hours of data recorded n=22). This left 381 patients eligible for inclusion in the study. Males made up 38.6% (147) of the studied population. The mean age was 57.8 years (SD= 14.4) with an age range from 18- 89 years. The GMS patient population was 46.7% (n= 178), and the remaining 53.3% (n=203) were private patients.

365 patients had at least one pre-test clinic BP measurement recorded. The median interval from pre-test to ABPM recording was 3 weeks . The results for the pre-test blood pressure measurements are shown in Table 3. Forty-four of these patients had a normal/ borderline BP which represented 12% of those tested.

On the ABPM recordings, 38.6% (n=147) of the population had a result of normal or borderline BP. 20.4% (n=78) had a completely normal result. 14.5% (n=55) were not on any medication prior to the test and had a diagnosis of white coat hypertension. The results of the ABPM measurement are shown in Table 4.

233 patients had a post test CBPM recorded. Of these 60 were normal/ borderline, which signified that 26% of those tested were achieving target blood pressures (Table 3). The median interval of post test BP recording was 6 weeks. 224 patients had both a pre- and a post- test CBPM performed. The mean reduction of 10.2 mmHg in systolic pressure from before the test (158 mmHg;SD=19.2) to after the test(147.8 mmHg;SD=17.6) was statistically significant [Paired sample T test: p value <0.001 (95% CI 7.4-13.4)]. The mean reduction in diastolic pressure of 5 mmHg from before the test (90.5mmHg; SD=11.01) to after the ABPM test (85.5 mmHg; SD= 9.9) was also significant [p <0.001 (95% CI 3.2-6.6)]. Of the 148 (38.8%) patients who did not have a post test BP recorded, 44.3% (n=65) had a normal ABPM.

In relation to anti-hypertensive treatment, 38% (n=145) had a change in their medical treatment after the ABPM. 31.7% (n=121) had a new medication started, and 3.9% (n=15) had a medication stopped. The remaining 2.4% had their medication increased or decreased. Figure1 shows the most commonly prescribed new medications. The mean number of medications that patients were on prior to the ABPM was 0.96 while the mean number of medications after the test was 1.23 (P< 0.001).

Discussion

High blood pressure is one of the most common reasons for taking lifelong medication. While hypertension is one of the most readily preventable causes of strokes and other cardiovascular complications [16], the accurate diagnosis of hypertension has important implications for patients. Having the label of hypertension has been shown to reduce a persons sense of well-being and increase absenteeism from work. [17,18] It also has implications for medical insurance and drug treatment can often cause bothersome side effects. This has prompted major efforts to improve the accuracy of diagnosis and to develop targeted treatment

strategies. [19] While conventional clinic BP measurement still remains the most tried and tested way on which to base decision making, other methods such as ABPM and self-monitoring have evolved over the past 25 years to have an increasing role in the field of hypertension.
There has been growing interest in ABPM internationally and different countries including Ireland, [20] Belgium,[21] Denmark,[22] Italy,[23] Japan [24] and South America [25] have produced studies proposing normal values for ABPM populations. However there is little known about how this diagnostic tool is currently being used in day-to-day practice. Therefore we conducted this pragmatic, cross sectional study to look at how ABPM is being used, and the implications of such use, in routine Irish clinical practice.
The proportion of patients achieving target in pre-test CBPM was only 12%. According to the ABPM findings however, over one third (38.6%) of the population tested had a BP that was deemed to be normal or borderline.20% had a completely normal result. The prevalence of white coat hypertension has been estimated to be in the region of 15-30%.[26] Just over a quarter (26%) of those who had a post test CBPM measured had achieved target. However selection bias may have influenced this increase in proportion achieving target as a smaller number had a BP recorded after the test than before the test (n= 365 vs n= 233). In those who had both a pre- and a post-test blood pressure recorded, there was a statistically significant reduction in the mean of both the SP and the DP from the pre-test BP to the post-test BP. This may have been a reflection on the management decisions that were taken based on the ABPM result. However regression to the mean may also have contributed to this finding.

In terms of medication changes, 38% of the patients had a change in their medication after the ABPM. These changes were noted in charts or in the prescription issued in the visit after the 24-hour result was obtained. Almost one third (31.7%) of patients had a new medication started but 3.9% had a medication stopped and the remainder had their medication either increased or reduced. Despite lack of compelling indications based on the BHS guidelines, the high number initiated on Angiotensin II blockers is surprising. 14.5 % (55) patients were not on any medication prior to the test and had a normal ABPM – none of these patients were commenced on anti-hypertensive medication after the test. These patients, who can be categorised as white coat hypertensives, may have been commenced on medication if monitored by clinic BP alone. The ABPM result therefore may have prevented these patients from unnecessarily commencing on lifelong antihypertensive treatment. A randomised controlled trial by Staessan et al concluded that adjustment of anti-hypertensive treatment based on ABPM instead of CBPM led to less intensive drug treatment with preservation of blood pressure control, general well-being and inhibition of left ventricular enlargement. [27]

This study has several limitations. Firstly, as it is cross-sectional in design, it therefore has limited value with respect to causal inferences. Secondly, as participant practices volunteered, the enrolled sample is convenient rather than representative. Thirdly, using medical records as a means of recording data has inherent limitations. Other factors, which may have influenced decision-making and management during a consultation were not recorded. Fourthly, as we used a time interval of 1 year in which to conduct the study, this resulted in a relatively short follow-up period. Though little work has been done in this area, further research may review the population at a later date in terms of mean blood pressures and proportion of patients reaching targets. Another difficulty we faced was the selection of categories for the targets in ABPM. This difficulty reflects the international debate about what are acceptable levels for blood pressures measured by ABPM. While the guidelines are quite clear for CBPM, there is much debate over what are appropriate levels for blood pressure in those measured by ABPM. In this study, we used the categories as defined by the dabl reports, which were published by the European Society of Hypertension. [13] (Table 1)

ABPM allows patients with adequate blood pressure control to be identified and perhaps prevented from unnecessarily commencing on anti-hypertensive medication. There was a significant reduction in the both the mean systolic and diastolic clinic blood pressures in patients who had undergone the ambulatory monitoring in this study. ABPM appears to have a significant impact on decision-making of general practitioners and on the medical management of patients with hypertension in the community.

Correspondence: G Ni Uallachain
Department of General Practice, No.1 Distillery Road, NUI, Galway.
Email: grainne.niuallachain@nuigalway.ie

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Study of ovarian cancer management

E Gaughan, T Javaid, S Cooley, P Byrne, B Gaughan
Beaumont Hospital, Dublin 9

Abstract
Ovarian cancer is the most lethal gynecological malignancy. Many patients present at an advanced stage as the symptoms of early stage disease can be vague. AIM We evaluated the demographics, treatment regimens and survival rates of ovarian cancer patients attending Beaumont Hospital Dublin over a nine year period. A retrospective chart review of ovarian cancer patients attending Beaumont Hospital between 11/10/94 and 30/6/3 was performed. Patients were selected from pathology records. Patients with borderline histology and those who died of unrelated causes were excluded. 31% of individuals presented with distension as their only clinical sign. 20% presented with a mass as their only clinical sign. The most common cell type was papillary serous adenocarcinoma in two thirds of cases. 54% presented with advanced disease [stage III-IV]. Treatment involved surgical clearance or debulking +/- chemotherapy. 5 year survival for Stage I was 95% versus 19% for Stage III. This highlights the importance of early diagnosis.

Introduction

Ovarian cancer is the most lethal gynecological malignancy. It is the fifth most common cancer in females [1] and its peak incidence is 56 years of age. Papillary serous cystadenocarcinomas account for 70% of ovarian cancers [2] mucinous cystadenocarcinoma 10% and endometrioid tumours 10%.[3,4]

Known risk factors include caucasian race, nulliparity, early age of menarche, late age of menopause and a family history of ovarian or breast cancer. Protective factors include use of the OCP, multiparty and breastfeeding. [5,6.]

Symptoms of early stage disease are often vague and the majority of cases are advanced at diagnosis. Advanced disease is associated with distension, nausea and anorexia due to the presence of ascites, omental or bowel metastases. [7,8,9,]

Ovarian malignancies are surgically staged and occult metastases have been reported in 30% of patients with apparent Stage I and 43% with apparent Stage II disease [10] .

The Irish Cancer Registry currently provides data on disease incidence and annual mortality. However, detailed information regarding clinical presentation, staging, management and survival is currently unavailable in the Irish population. We sought to study these parameters in all ovarian cancer patients attending Beaumont Hospital, Dublin over a nine-year period.

Methods:

59 patients were identified with confirmed ovarian cancer from the Beaumont Hospital pathology database during the nine-year period from 11/10/94 to 30/06/03. A retrospective review was performed and data collated regarding clinical presentation, staging, management and survival. Patients with borderline histology and those who died of unrelated causes were excluded.

Results

Table1 Distribution of presenting signs and symptoms
Half of all individuals presented with only one clinical feature. 18 (31%) presented with distension and 12 (20%) with a mass.

The mean parity for the study population was 2.58, however 13 (22%) individuals were nulliparous. 8 women (14%) had a positive family history of ovarian carcinoma or breast and ovarian carcinoma.

Table1 Distribution of presenting signs and symptoms

Sign/Symptom	Number of individuals (%)
Distension	28 (47)
Pain	20 (34)
Mass	12 (20)
Weight Loss	5 (8.5)
Constipation	3 (5.1)
Anorexia	2 (3.4)
Frequency	2 (3.4)
Pleural Effusion	1 (1.7)
Urinary Retention	1 (1.7)
Incidental	4 (6.7)

Table 2 Distribution of tumour type in ovarian cancer population

Tumour Type	Number of individual (%)
Papillary Serous Cystadenocarcinoma	39 (66)
Mucinous Cystadenocarcinoma	10 (17)
Endometrioid	4 (6.7)
Mesodermal Mixed	2 (3.4)
Clear Cell Type	2 (3.4)
Immature Teratoma	1 (1.7)
Granulosa Cell	1 (1.7)