

Recent Developments in Hypertension Management

Prof. Eoin O'Brien writes about four of the more important recent developments in hypertension management and research.

There have been many developments in hypertension management and research in the past year and space does not permit giving attention to all. I have singled out, therefore, four topics that seem to me to be relevant for practising physicians.

AMBULATORY BLOOD PRESSURE MEASUREMENT

Position paper on ABPM: The Working Group on Blood Pressure Monitoring of the European Society of Hypertension (ESH) held a consensus conference on ABPM in Milan in 2011. The technique was comprehensively reviewed and arising from this meeting, a position paper was drafted incorporating the opinions of 34 international experts in hypertension and BP measurement.

The following are the more relevant recommendations.

Devices and software: Most devices available for ABPM have been validated independently according to the internationally accepted validation protocols. To-date recommendations for ABPM use have tended to concentrate on the accuracy of device hardware, with little attention being paid to the software presentation and analysis of ABPM data. The Position Paper breaks new ground, therefore, in stipulating the software requirements for ABPM.

ABPM thresholds for clinical practice: The selection of cut-off values for ABPM normality excited much discussion among the authors but ultimately the threshold values in the recent guidelines and the results of outcome studies influenced the definition of consensus values summarized in Box 1.

Number of measurements for a satisfactory ABPM: There are no firm data on which to base recommendations for a satisfactory ABPM recording. The position paper saw it

as being reasonable to increase the minimum of daytime measurements to 20 while retaining a minimum seven measurements at night based on measurements being performed every 30 minutes, or more frequently.

Diagnosis of hypertension: The clinical indications for ABPM are listed in Box 2.

Cost and availability of ABPM: Until recently ABPM has been generally cited as being more expensive than other measurement techniques, but a detailed cost-benefit analysis by NICE has shown that the use of ABPM is the most cost-effective method of managing hypertension.



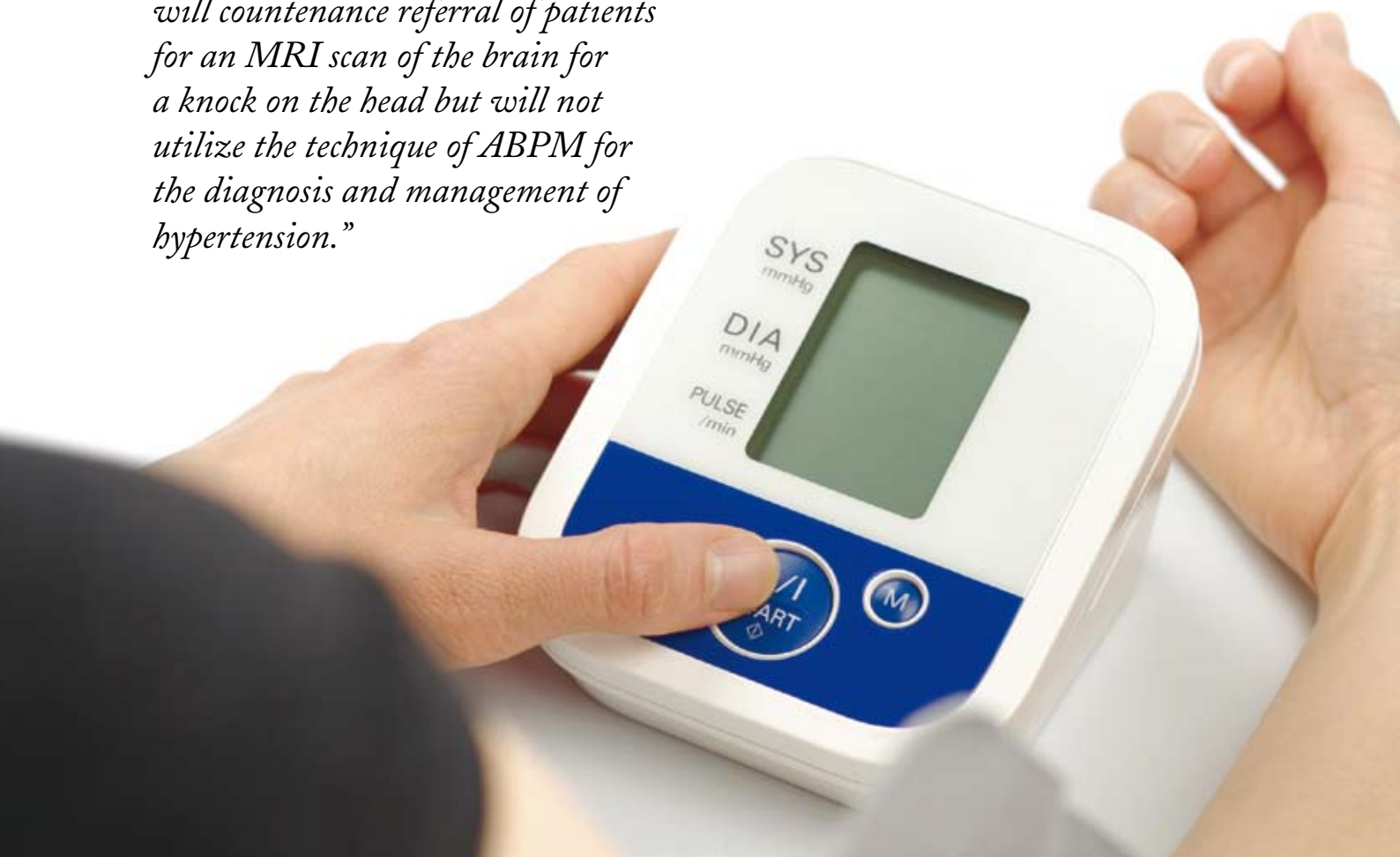
Prof Eoin O'Brien

MAKING ABPM ACCESSIBLE IN PHARMACIES

ABPM, though recommended for the diagnosis and management of hypertension, has limited availability. In a recent study using the dabl software that allowed central collection, analysis and comparison of ABPM data from 46,978 patients attending primary care and 1,698 attending pharmacies between 2007 and 2013 the characteristics of patients with ABPMs recorded in pharmacies were similar to those recorded in primary care practices. It is feasible, therefore, to perform ABPM in pharmacies, which can be utilised to make ABPM more accessible to the large number of people in the population with hypertension. This study,

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which is the first to report on ABPM data collected in pharmacies, is important because the expansion of ABPM access in accordance with international guidelines will be challenging and if the technique is to be made widely available to patients with hypertension, alternative providers to primary care and specialist clinics will have to be enlisted.

US HYPERTENSION GUIDELINES IN DISARRAY

The Joint National Committee (JNC) 8 report for the guidance of blood pressure management in the US has been long awaited, having been variously dubbed 'JNC-late' and 'JNC-wait'. Well it arrived some months ago in the Journal of the American Association [JAMA], where it was been ushered in by no less than three editorials. The problems with this report are threefold. First this is not the JNC 8 report because the original committee was disowned by the government body that set it up. Secondly, one has to ask how the authors managed to make their recommendations without even mentioning the methodology on which they are based. If the measurement of a marker (and blood pressure is simply a marker) is inaccurate, it follows that recommendations based upon it will be flawed. One has

to wonder at the intransigence of clinical practice that will countenance referral of patients for an MRI scan of the brain for a knock on the head but will not utilise the technique of ABPM for the diagnosis and management of hypertension. Third, the most serious recommendation in this report is raising the threshold for treatment in elderly hypertensive patients from 140/90 to 150/90 mmHg, which can only be to the detriment of blood pressure management. Happily in Ireland, as in the rest of Europe, we will adhere to the European guideline which advocates treatment of all patients with a blood pressure greater than 140/90 mmHg regardless of age.

RENAL DENERVATION SHOWN TO BE INEFFECTIVE

Few topics have generated as much interest as the technique of renal denervation. Many millions have been invested in the procedure and there have been thousands of publications in the medical literature and the lay press hailing the technique as the greatest medical innovation to have happened in recent times. Renal denervation would not only cure hypertension, it would also improve cardiovascular outcome in other co-morbid conditions

such as heart failure, diabetes mellitus, sleep apnea, and arrhythmias. It was anticipated that studies would soon show that the procedure would allow patients to throw away their tablets and be permanently cured of hypertension. But there were those who questioned the impetus for a treatment that was based on economic rather than scientific considerations. Guidelines were drawn up for the procedure and largely ignored. Importantly, the guidelines stipulated that before resistant hypertension could be diagnosed, white coat hypertension had to be excluded using ABPM. Indeed when data from ABPM were available they were seldom reported and, when analysed, did not show significant blood pressure reduction. Cautious scientists also warned that the procedure, although apparently safe in the short-term, might induce changes in the future due to the more general effects of renal sympathetic denervation and possibly vascular damage to the renal arteries. Nonetheless, renal denervation moved on at an alarming pace with approval being granted in several European countries but not in the US. Then in January this year a press release from Medtronic, the company that had sponsored the three Symplicity trials, declared that the technique had been shown to be ineffective in the only one of these trials that had been well conducted and evaluated, namely the Symplicity HTN-3 trial.

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The full results of this study have now been published in the *New England Journal of Medicine* and they show, as anticipated, that renal denervation resulted in statistically insignificant changes in blood pressure and most trials of the technique have been abandoned or suspended. Many patients – some 5000 worldwide it is estimated – may now ask with justification if they might not have been spared from undergoing an ineffective procedure that was not without risk.

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THRESHOLDS FOR HYPERTENSION DIAGNOSIS BASED ON ABPM

- 24-hour average
 $\geq 130/80$ mmHg
- Awake (Daytime) average
 $\geq 135/85$ mmHg
- Asleep (Night-time) average
 $\geq 120/70$ mmHg

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CLINICAL INDICATIONS FOR ABPM

Identifying white coat hypertension phenomena

- White coat hypertension in untreated subjects
- White coat effect in treated or untreated subjects
- False resistant hypertension in treated subjects

Identifying masked hypertension phenomena

- Masked hypertension in untreated subjects
- Masked uncontrolled hypertension in treated subjects

Identifying abnormal 24-hour blood pressure patterns

- Daytime hypertension
- Siesta dipping/post-prandial hypotension
- Nocturnal hypertension
- Dipping status
- Morning hypertension and morning blood pressure surge
- Obstructive sleep apnoea

Assessment of treatment

- Increased blood pressure variability
- Assessing 24 hour blood pressure control
- Identifying true resistant hypertension

Assessing hypertension in the elderly

Assessing hypertension in children and adolescents

Assessing hypertension in pregnancy

Assessing hypertension in high-risk patients

Identifying ambulatory hypotension

Identifying blood pressure patterns in Parkinson's disease

Endocrine hypertension