

Proceedings from a workshop on measurement of blood pressure of The Working Group on Blood Pressure Monitoring of The European Society of Hypertension, Milan, June 1999

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Introduction

Ambulatory blood pressure monitoring (ABPM) has stimulated much research during the last two decades. This is reflected by a growing number of publications dealing with this method of measuring blood pressure. In 1998, as many as 97 publications were published in this field (Medline), compared with one in 1981 and 33 in 1988. ABPM is a good example of successful patient-oriented research. Clinically relevant questions have been asked and answered progressively. Some of the more important of these issues were presented and discussed at a recent workshop on measurement of blood pressure organized by The Working Group on Blood Pressure Monitoring of The European Society of Hypertension. A summary of these presentations provides an interesting account of some of the ways in which the changing role of measurement of blood pressure is ultimately going to influence both clinical practice and research in hypertension as we move into the next millennium.

Measurement of blood pressure has become a routine procedure in everyday practice. It was based, until recently, on the conventional auscultatory technique using a mercury sphygmomanometer. However, the banning of mercury from clinical use in the near future will necessitate substituting this classical apparatus by an electronic device. This issue is discussed by Professor O'Brien.

What has been learned by monitoring blood pressure while the patients undergo their usual daily activities outside the clinical setting? There is no longer any doubt that measuring blood pressure under ambulant conditions provides a better estimate of cardiovascular risk than blood-pressure readings taken by a doctor. This is true for complications, such as cardiac and arterial hypertrophy, microalbuminuria and the development of cerebral lacunae. Furthermore, ABPM makes it possible to record blood pressure not only during daytime, but also during sleep. This has led to the observation that some patients with an insufficient nocturnal fall in blood pressure have a greater than normal risk of developing target-organ damage. Moreover, ABPM might have particular relevance for assessing certain groups of hypertensive patients, such as those with diabetes mellitus and renal disease, a topic discussed by Dr Josep Redon.

Not surprisingly, therefore, ABPM is more and more commonly being used in the evaluation of hypertensive patients. According to the latest recommendations by World Health Organization/International Society of Hypertension, ABPM is particularly valuable for assessing blood pressure under various conditions, for instance in patients with unusual variabilities of blood pressure during the same visit or between visits, in those who may have white-coat hypertension and a low cardiovascular risk, in those with symptoms suggesting that they experience episodes of hypotension and in those with hypertension resistant to drug treatment. ABPM has turned out to be especially useful for characterizing the blood-pressure-lowering effects of antihypertensive drugs. The main advantages of ABPM are linked to the availability of a large number of blood-pressure readings, which allows one to use small samples in clinical trials, as well as to the possibility of being able to define the time course of the drug-induced changes in blood pressure. Studies involving ABPM are now considered indispensable for obtaining regulatory approval for new antihypertensive drugs. This subject is presented by Dr Jan Staessen.

The experience deriving from the development of automated devices for ABPM has established the need for reliable and accurate devices for measuring blood pressure and this has led to the production of official recommendations for validating new devices both in Europe (the British Hypertension Society's protocol) and in the USA (the Association for the Advancement of Medical Instrumentation's standard). However, as Professor O'Brien points out, these protocols are difficult to perform and the data deriving from many validation studies now permit a review of previous procedures with a view to simplifying validation studies in the future.

Developments in validation of ABPM will undoubtedly have a major positive impact in coming years on the reliability of blood pressure readings obtained not only by ABPM but also by other measuring techniques. Dr Gianfranco Parati outlines how continuous waveform analysis with the Finapres device has developed over the years.

The proceedings of this meeting emphasize the need to develop devices capable not only of providing accurate measurements of blood pressure but also of providing profiles of measurement. After all, if a measurement is inaccurate or misleading, the inevitable consequence is incorrect diagnosis and inappropriate management.