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Since the beginning of time, man has viewed the characteristics of the pulse as pointers to health, disease, and death. Ancient Chinese doctors were responsible for the first written reference to the pulse as a diagnostic tool in around 500 BC. Indeed it was the single most important tool at their disposal. Patients would extend their arm through a bedside curtain for the physician to determine the symptoms, diagnosis, prognosis, and proper treatment by intensive palpation of the pulse. Literally hundreds of possible characteristics were obtainable, since the pulse had three distinct divisions, each associated with a specific organ, and each division had a separate quality, of which there were dozens of varieties. Examination even took into consideration the hour, day, and season of the year. It was thus hardly surprising that the Muo-Ching textbook should have devoted its 10 volumes exclusively to details of the pulse.¹

Many studies have described the major prognostic impact of heart rate. For example, the Coronary Artery Surgery Study (CASS) of 24 913 patients with suspected or proven coronary artery disease showed an association between heart rate exceeding 83 beats per minute and increased cardiovascular mortality.² Similarly, the more recently published International Verapamil SR-trandolapril Study (INVEST) in 22 573 patients with coronary artery disease and hypertension found an association between heart rate exceeding >75 beats per minute and increased cardiovascular events.³

Ivabradine is the first drug to show a specific impact on heart rate thanks to a unique mechanism of action: inhibition of the

sinus node I_f current. It has recently been shown to reduce angina frequency and increase total exercise duration and time to 1-mm ST-segment depression in stable coronary artery disease.^{4,5} In addition, in stable coronary artery disease and left ventricular systolic dysfunction, it was found to lower the incidence of cardiovascular events in the patient subgroup with heart rates of 70 beats per minute or over.⁶

Evaluation of the pulse has thus been used for thousands of years in the evaluation of patients. Perhaps denigrated as a clinical parameter in the modern era on the grounds of its sheer accessibility and simplicity, we now have incontrovertible epidemiological evidence that heart rate is an important prognostic factor, in particular when it exceeds 70 beats per minute. Ivabradine modulates heart rate in a specific way that accounts for its compatibility with a wide range of standard anti-ischemic therapies. It is thus becoming established as a useful addition to the pharmaceutical armamentarium, providing positive prognostic impact in patients with stable coronary disease and left ventricular systolic dysfunction. The challenge this question raises for cardiologists in 2009 is therefore: have you incorporated the monitoring and, as appropriate, the modulation of heart rate into your day-to-day management of coronary patients? ■

References

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