

## On World Thrombosis Day

The International Society on Thrombosis and Haemostasis (ISTH) has declared Oct 13 to be World Thrombosis Day, to be held annually from 2014 onwards. The purpose is to work together with and assist local and regional organisations to increase awareness of and education about thrombosis.

This date has been chosen because it is the birthday of Rudolf Virchow (1821–1902), the founder of cellular pathology, who worked in Berlin and Würzburg, Germany. He was a remarkable man, paving the way for modern medicine along with the Viennese pathologist Carl von Rokitansky. Virchow worked not only as a pathologist but also did animal experiments, treated patients, and advocated public health—pursuing his socially minded ideas with such vigour that he was forced to leave Berlin at one stage (although re-instated at the Charité hospital, in Berlin, 6 years later). Virchow was the first to show by autopsy studies that pulmonary emboli originate from thrombi in the deep veins of the leg, and he suggested three groups of causes for thrombosis which were, liberally translated, stasis, hypercoagulability, and vessel wall pathology. Being the first to use the words thrombosis and embolism,<sup>1</sup> Virchow is rightly seen as the father of modern research into thrombosis.

The need to raise awareness of thrombosis becomes clear when one reads the paper on the global burden of thrombosis published in the *Journal of Thrombosis and Haemostasis*,<sup>2</sup> and copublished by *Thrombosis and Haemostasis, Seminars in Thrombosis, Thrombosis Research and Arteriosclerosis, Thrombosis and Vascular Biology*. Arterial thrombosis (ie, ischaemic heart disease and ischaemic stroke) causes more than 10 million deaths per year worldwide. When years of life lost to premature death and years lived with disability are looked at jointly, ischaemic heart disease is the leading cause of death worldwide. Moreover, the death toll of arterial thrombosis has increased by 25–35% during the past 20 years, which is determined by two rapidly diverging trends: a decrease in industrialised countries and an increase in developing countries. These are staggering numbers, but, as the report points out, a third major contributor to the global burden of thrombosis is venous thrombosis (deep vein thrombosis and pulmonary embolism). Unfortunately, there is

much less detailed information available about deaths and disability caused by venous thrombosis. The Global Burden of Diseases, Injuries, and Risk Factors Study by WHO did not include venous thromboembolism as a specific cause of death or disability.<sup>3</sup>

Because of the scarcity of data and awareness, the ISTH report<sup>2</sup> focuses on venous thrombosis and, in a painstaking effort, all published reports have been reviewed and used to assess the global burden it causes. What emerges is a bleak picture. The incidence of venous thrombosis is not much different from that of myocardial infarction, at 1–2 per 1000 people per year. Although the incidence has a clear age gradient, there is also a substantial risk at young ages because of a relation with pregnancy, puerperium, oral contraceptive use, and injuries.

One estimate for the European Union arrived at a death toll of 500 000 venous thrombosis-related deaths per year (in a population of about 500 million),<sup>4</sup> which falls between the numbers of deaths from ischaemic heart disease and ischaemic stroke. Worldwide, there are about 10 million events of venous thrombosis per year associated with admission to hospital, with an equal incidence in high-income and low-income countries, but with more deaths in the latter. Venous thrombosis related to hospital admissions is the leading cause of loss of disability-adjusted life-years (DALYs). There is substantial disability, both by ulceration of the leg due to the chronic impairment of venous flow, and to lost cardiorespiratory capacity after pulmonary embolism. In view of little awareness of venous thrombosis and the low frequency of autopsies nowadays, the true figures are likely to be substantially higher, with acute fatal pulmonary emboli registered as sudden cardiac death.

Venous thrombosis should be prevented and, when it occurs, treated promptly. About two-thirds or more of cases are provoked by factors such as surgery, admission to hospital, immobilisation, and cancer. In theory, these factors can be easily prevented by anticoagulants, but at the risk of side-effects, notably haemorrhage. Anticoagulant-associated bleeding is the number one cause of iatrogenic admission to hospital. Hence, prevention should be tailored to high-risk individuals. Large studies integrating genetic, environmental, and lifestyle factors are needed to achieve effective risk



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stratification. Further studies are also needed to improve the risk–benefit profile of anticoagulant prophylaxis. A third of events occur spontaneously, and a substantial number occur in the presence of risk factors that only lead to disease in a small fraction of people exposed to them, such as oral contraceptive use, pregnancy, or minor injuries. Here, awareness in general, and of signs and symptoms in particular, is key to prompt diagnosis and treatment of deep vein thrombosis and pulmonary embolism.

For more on ISTH see  
www.isth.org

The ISTH provides materials on its website to assist national and regional organisations to increase awareness of thrombosis, including tools, flyers, and slides. More than 100 organisations worldwide, from municipal anticoagulation clinics to national foundations, will organise campaigns on Oct 13. World Thrombosis Day will be held every year, hopefully leading to improved awareness of thrombosis, and thereby to increased prevention and prompt treatment when necessary.

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- 1 Virchow R. Phlogose und thrombose im gefäßsystem. Gesammelte abhandlungen zur wissenschaftlichen medicin. Frankfurt: Staatsdruckerei, 1856 (in German).
- 2 ISTH Steering Committee for World Thrombosis Day. Thrombosis: a major contributor to global disease burden. *J Thromb Haemost* 2014; **12**: 1580–90.
- 3 Lozano R, Naghavi M, Foreman K, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; **380**: 2095–128.
- 4 Cohen AT, Agnelli G, Anderson FA, et al; VTE Impact Assessment Group in Europe (VITAE). Venous thromboembolism (VTE) in Europe—the number of VTE events and associated morbidity and mortality. *Thromb Haemost* 2007; **98**: 756–64.