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EDITORIAL COMMENT

Unmet needs in pulmonary embolism: Simplified anticoagulation and much more☆

Necessidades clínicas na embolia pulmonar: simplificação do tratamento e muito mais

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Venous thromboembolism (VTE) is the third most common cardiovascular disease, after stroke and myocardial infarction, affecting at least one individual per 1000 of the general population.[1] Its incidence rises exponentially with age: two-thirds of patients with pulmonary embolism (PE) are aged 60 years or more. VTE is a frequent cause of death, responsible for over three million deaths a year, while PE is the leading preventable cause of hospitalization-related mortality. Untreated PE is fatal in 30% of cases, half of all deaths (many of them sudden) occurring in the first few hours. The clinical presentation of PE is highly variable and diagnosis requires a high level of suspicion. For these reasons, VTE has been the subject of particular attention among healthcare policy-makers. Prevention, diagnosis and rapid and appropriate treatment are crucial to any strategy to reduce the mortality and disease burden due to VTE.

Other consequences of VTE include recurrence (which is particularly common in the first months after the initial episode and in spontaneous or cancer-associated VTE) and chronic complications such as post-thrombotic syndrome and thromboembolic pulmonary hypertension, which cause suffering and morbidity and can shorten life expectancy.

The epidemiology of PE in Portugal was recently analyzed using data on hospitalizations in National Health Service hospitals between 2003 and 2013.[2] In this period there were 35 200 episodes of hospitalizations of adults in which at least one of the diagnoses was PE (the primary diagnosis in 67% of cases). The estimated incidence in 2013 was 35 per 100 000 of the adult population, a lower figure than in other countries, which suggests the possibility of underdiagnosis in Portugal. Between 2003 and 2013 the annual number of episodes increased, but in-hospital mortality decreased (from 31.8% to 17% in all episodes and from 25% to 11.2% in episodes in which PE was the primary diagnosis). The authors estimated that 79% of the reduction in PE-associated in-hospital mortality in recent years could be attributed to more effective hospital care and the remainder to favorable changes in patient characteristics associated with risk of death.

VTE, and especially PE, are more closely linked to cardiology than is generally realized. Several of the risk factors predisposing to VTE are frequently found in patients with heart disease: advanced age, obesity, diabetes, heart failure, smoking, chronic obstructive pulmonary disease, dyslipidemia and hypertension.[3] Coronary calcification is significantly more prevalent in patients with a history of

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spontaneous VTE than in the general population,[4] and in the first year after an episode of VTE the likelihood of hospitalization for myocardial infarction or stroke increases two- to three-fold,[5] while in the first six months after a myocardial infarction, there is an eight-fold increase in risk of PE.[6]

Reperfusion therapy, usually thrombolysis, is essential in PE presenting with shock or hypotension (considered high-risk PE). In lower-risk PE, anticoagulation for at least three months is mandatory to avoid early death or symptomatic or fatal recurrence. The European Society of Cardiology guidelines[1] recommend beginning with a parenteral anticoagulant (unfractionated heparin, low molecular weight heparin or fondaparinux) over the first 5-10 days overlapping with the initiation of a vitamin K antagonist (VKA) or followed by one of the new oral anticoagulants (NOACs): dabigatran or edoxaban. If rivaroxaban or apixaban is given instead, oral treatment with one of these agents should be started directly, although in this case with an increased dose over the first three weeks or the first seven days (for rivaroxaban or apixaban, respectively). In patients at greater risk of recurrence, anticoagulation should be extended beyond the initial three months or even indefinitely, weighing the individual's bleeding risk and periodically reassessing the decision.

Clinical trials of the four NOACs for treating VTE show that these drugs are at least as effective as a VKA, and may be safer in terms of major bleeding.[7] Bearing in mind the various limitations of VKAs and the inconvenience and risk of parenteral anticoagulants, these results show that NOACs are an attractive option for prevention and treatment of VTE.

The article by Santos et al. in this issue of the *Journal* is a contribution to the growing experience of NOACs in moderate- to high-risk VTE.[8] The authors conclude that these drugs are as effective and safe as the conventional approach, and reduce hospital length of stay.

In summary, VTE is a common and often lethal condition that affects both in- and outpatients, frequently recurs, is underdiagnosed, and leads to chronic complications. Cardiovascular medicine can play an important part in reducing the disease burden attributable to VTE. Anticoagulation is crucial to the treatment of VTE and for this purpose NOACs have a better risk-benefit ratio than VKAs, simplifying treatment and reducing inconvenience.

Conflicts of interest

The author has no conflicts of interest to declare.

References

1. Konstantinidis SV, Torbicki A, Agnelli G, et al. 2014 ESC Guidelines on the diagnosis and management of acute pulmonary embolism. Eur Heart J. 2014;35:3033–80.
2. Gouveia M, Pinheiro L, Costa J, et al. Embolia pulmonar em Portugal: epidemiologia e mortalidade intra-hospitalar. Acta Med Port. 2016;29:432–40.
3. Mi Y, Yan S, Lu Y, et al. Venous thromboembolism has the same risk factors as atherosclerosis: a PRISMA-compliant systemic review and meta-analysis. Medicine. 2016;95:e4495.
4. Hong C, Zhu F, Du D, et al. Coronary artery calcification and risk factors for atherosclerosis in patients with venous thromboembolism. Atherosclerosis. 2005;183:169–74.
5. Sorensen HT, Horvath-Puho E, Pedersen L, et al. Venous thromboembolism and subsequent hospitalisation due to acute arterial cardiovascular events: a 20-year cohort study. Lancet. 2007;370:1773–9.
6. Rinde LB, Lind C, Smabrekke B, et al. Impact of incident myocardial infarction on the risk of venous thromboembolism: the Tromso Study. J Thromb Haemost. 2016;14:1183–91.
7. Salmerón Febres LM, Cuenca Manteca J. Direct oral anticoagulants in the treatment of venous thromboembolic disease. Ann Vasc Surg. 2017;42:337–50.
8. Santos SM, Cunha S, Baptista R, et al. Early, real-world experience with direct oral anticoagulants in the treatment of intermediate-high risk acute pulmonary embolism. Rev Port Cardiol. 2017;36:801–6.