IN CONSULTATION

We invite you to submit questions on specific clinical problems

Comparing options for preventing PE: Pneumatic compression vs anticoagulation

How effective are intermittent pneumatic compression (IPC) devices for the prevention of pulmonary embolism (PE)? Are they as effective as low molecular weight heparin (LMWH)?

First, let me try to provide a brief and direct reply to each question, without too much qualifying:

► *How effective is IPC?* The answer is, quite effective—resulting in a 30% to 50% or greater reduction in deep venous thrombosis (DVT) risk in practically all relevant clinical scenarios (Figure).[1] It has long been assumed, not unreasonably, that preventing proximal DVT would necessarily prevent most cases of pulmonary thromboembolism. However, despite the obvious logic behind this assumption, and as pointed out by Hull and Pineo,[2] direct proof of this specific benefit has not yet been published.

► *Is IPC as effective as LMWH?* Yes, it is, or very nearly so, for patients at low to moderately high risk for venous thromboembolism but probably not for high-risk patients.[1,3,4] Even in the high-risk group, however, IPC is clearly more effective than no prophylaxis. Therefore, IPC devices, *if properly used,* can be recommended as an appropriate alternative to anticoagulants for DVT prophylaxis among low-risk and perhaps even moderately high-risk patients[4] and as a good second choice for high-risk patients who should not receive anticoagulants. Furthermore, on the basis of the limited data, it has been suggested that the combination of IPC and heparin (unfractionated or low molecular weight) for very high-risk patients may be more effective in preventing DVT than either alone.[4]

Now for the caveats: There are 2 basic problems in addressing these questions. First, few (if any) prospective studies have directly compared IPC with LMWH therapy in the same types of patients, and none that I am aware of were conducted among a large number of patients representing a wide variety of clinical conditions. The published studies are small; are limited to a specific type of patient (for example, those undergoing hip or knee arthroplasty); or compare each of these methods of DVT prophylaxis with placebo, dextran, aspirin, low-dose unfractionated heparin, or even warfarin but not with each other.[1,4] Generally, then, comparisons of the relative efficacy of IPC and LMWH have to be made by extrapolating data from different studies with dissimilar

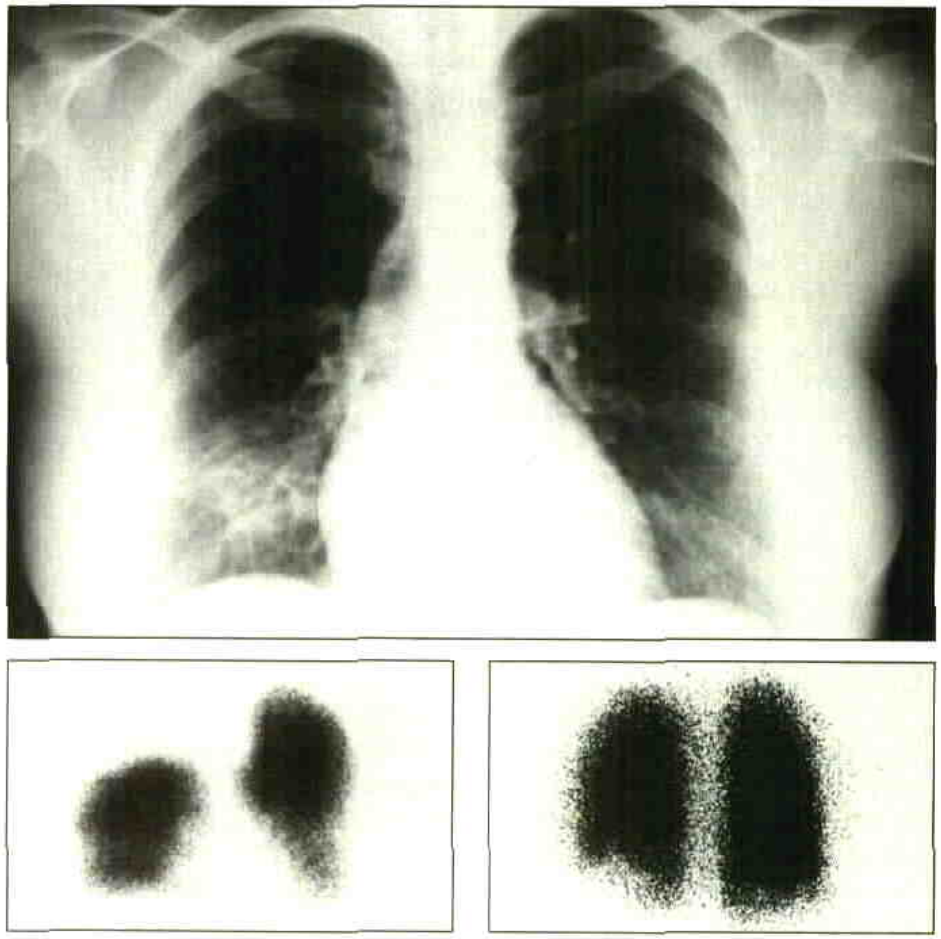

*Figure – **A right lower lobe alveolar infiltrate** is evident on this chest film from a 52-year-old woman in whom acute pulmonary embolism (PE) was diagnosed. The ventilation scan (right) is normal; the corresponding perfusion scan (left) reveals multiple segmental defects on the right side, indicating a high probability of PE. Prophylaxis is an important component of care for eligible at-risk patients, since PE may cause no symptoms and first manifest as a fatal event. (From Wirth JA, Matthay RA.* Consultant. *1995.[6])*

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patient populations and noncomparable study designs.

The second problem is that the efficacy of IPC devices is highly dependent on their being used continuously and properly. These devices, despite many improvements, are still somewhat cumbersome and often inconvenient for the patient and the nursing staff. Thus, perfect compliance with IPC therapy is difficult to achieve, given the need for patient transport, the requirements of daily procedures and bedside care and, possibly, patient complaints of discomfort because the legs are hot or painful. Such factors often lead to frequent or prolonged interruptions of IPC.

That IPC will lose efficacy if used improperly and intermittently has long been recognized.[5] In addition, the potential risk of instituting IPC therapy in a patient in whom a "fresh" (nonadherent) clot in the proximal leg veins may have just developed is self-evident.

ROLANDO BERGER, MD
Professor of medicine, University of Kentucky College of Medicine; associate chief for clinical affairs and fellowship program director in the division of pulmonary and critical care medicine, and director of the medical ICU, University of Kentucky Medical Center, Lexington.

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Acute coronary syndromes in women vs men: A "fact check"

Although most patients who have atherosclerotic heart disease present with chest pain, some reports have indicated that women with cardiac ischemia are more likely to present with "atypical" symptoms (such as abdominal discomfort or dyspnea) and that chest pain is a less specific finding in women than in men. Moreover, exercise ECG has been found to be less sensitive and specific in women. Are differences in approach needed in the emergency department evaluation of women with signs and symptoms of an acute coronary syndrome (ACS)?

We have become fairly proficient in quickly assessing and treating patients with ACS. A different approach in the emergency department is not necessary for women—just a heightened awareness of the need to perform the assessment for ACS with an appropriate index of suspicion.

Through middle age, the incidence of ischemic heart disease in women lags behind that in men by about 10 years, with the gap closing gradually but steadily over time. The rates become fairly equal around age 70. That more women survive to advanced ages accounts for the equal number of deaths among men and women in the United States each year due to coronary heart disease.

Of the estimated 12.2 million persons alive today who have a history of coronary artery disease (CAD), 51% are women. While myocardial infarction (MI) occurs in men at a slightly higher rate than in women, the prevalence of angina is greater in women.[1]

The fact is that cardiovascular diseases are the number 1 killer of both women and men. These diseases currently claim the lives of more than 500,000 women every year—more lives than the next 14 causes of death combined. One of 28 women dies of breast cancer, while 1 of 2 dies of cardiovascular disease.[1] When women do seek medical attention for chest pain, they are less likely than men to be referred for diagnostic testing, especially for cardiac catheterization.[2,3] The widespread teaching in the medical literature that CAD prevalence is lower in women makes it less likely that physicians will consider the diagnosis in their female patients and that the patients will recognize and respond to symptoms.

A correct and prompt diagnosis is vitally important because the mortality rate for women after an MI is more than 1.6 times higher than it is for men. In 63% of women (compared with 50% of men) who die suddenly of coronary heart disease, there are no prior cardiac symptoms.[1]

Women tend to be older when they present and to have a greater number of complicating illnesses, especially hypertension and diabetes.[4] Women are more often treated with nitrates and diuretics for their hypertension and less often with β-blockers, despite β-blockers' demonstrated protective effect.[5] They are also less likely than men to be taking aspirin. Unfortunately, women have not been well represented in research studies.

There is an urgent need for a heightened diagnostic acumen with female patients. Although the classic symptoms of angina occur in both sexes, there can be differences between women and men in the presentations of ischemia. Women more often have such symptoms as neck, shoulder, or abdominal discomfort; dyspnea; fatigue; and nausea and vomiting.[4,6,7] Angina is more likely in women than in men