Anticoagulation for central venous catheters in patients with cancer.

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Central venous catheter-associated venous thromboembolism in patients with cancer.

Central venous catheters (CVC) are increasingly used in medical practice world-wide and, regardless the differences among the various CVC,[1] these devices cause an increased risk of venous thromboembolism (VTE).[2] The magnitude of the problem is highly dependent on whether we consider symptomatic (0.3-28.3%) or asymptomatic VTE (27-66%),[2] and the diagnostic imaging technique used, being venography the most sensitive one.[2] At any rate, CVC-associated VTE represents a major clinical problem in terms of venous access loss, pulmonary embolism and additional costs.[3]

This issue may be of even greater relevance in cancer patients who combine the need of CVC insertion with an intrinsic increased risk of VTE related to the tumor itself. Therefore, the question on how to reduce the risk of VTE in cancer patients harboring CVC is not trivial. Of course, the expected benefit of any prophylactic treatment is highly dependent on the absolute VTE risk that vary according to the different tumor histotypes and clinical presentations (*e.g.*, pancreatic cancer or mediastinal syndrome).[2] Several authors explored whether or not anticoagulant therapies (AT) (low-molecular weight heparin or vitamin K antagonists) can prevent CVC-associated VTE.[1] In general, published data did not support systematic use of AT,[1,3,4] but there are some conflicting data.[5] This relative uncertainty prompted us to review the literature searching for randomized studies on the role of AT in the prevention of VTE in cancer patients harboring CVC.

On this specific issue we could identify 12 papers (most included in a recent Cochrane meta-analysis) suitable to evaluate the benefit of AT in cancer patients to prevent CVC-associated VTE.[4,5] Our analysis was focused on symptomatic VTE only, because previous analyses did not demonstrate a statistically significant increase in bleeding risk,[2,3,4,5] and we did not consider the prevention of asymptomatic VTE as a convincing endpoint.

In detail, data from 3018 patients enrolled in 12 randomized trials were included in this meta-analysis. Summary of Mantel-Haenszel risk ratios was calculated using a random-effects model. Our meta-analysis (Figure 1) suggests that AT compared to no active treatment significantly reduces the risk of symptomatic VTE (risk ratio = 0.61; 95% CI: 0.42-0.88). The absolute incidence of VTE was reduced from 6.8% to 3.7% (p=0.0001) with 32 patients (95% CI: 21-65) needed to be treated to prevent one event. Although our findings argue in favor of AT for the prevention of CVC-associated VTE in cancer patients, only a large prospective randomized trial will definitely answer this question.

Lorenzo D'Ambrosio, M.D.

Massimo Aglietta, M.D.

Giovanni Grignani, M.D.

Istituto di Candiolo – Fondazione del Piemonte per l'Oncologia, IRCCS

Candiolo, Italy

giovanni.grignani@ircc.it

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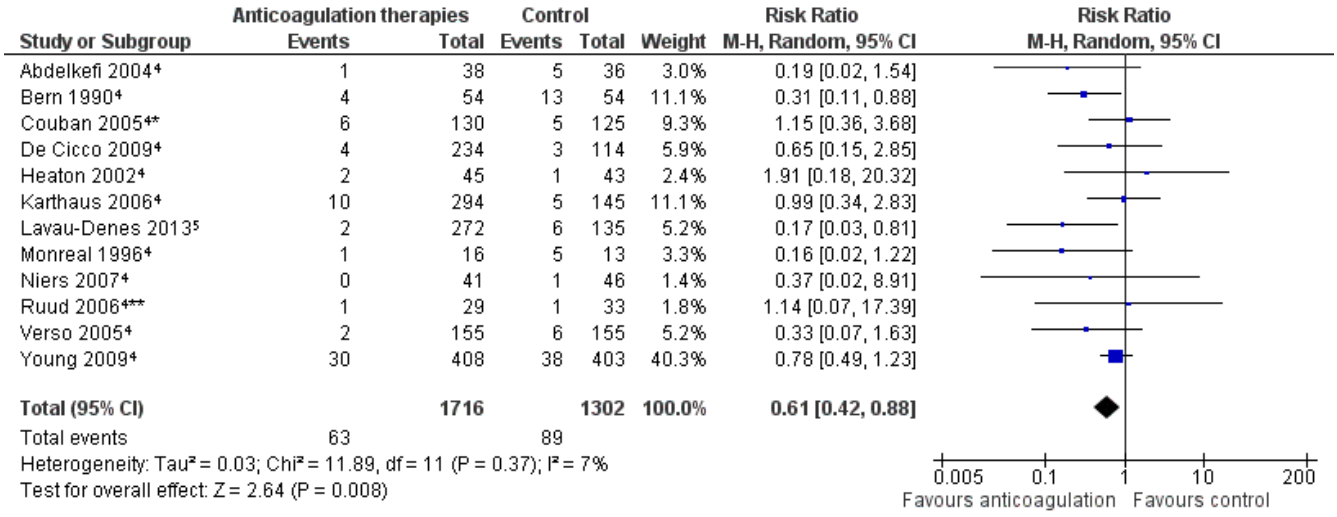

Legend: Figure 1. Meta-analysis of randomized trials comparing anticoagulation therapies (either heparin or vitamin K antagonists) *vs.* untreated controls for symptomatic venous thromboembolism (VTE) in cancer patients harboring a central venous catheter.

* The trial by Couban and Colleagues was excluded from previous Cochrane Review[4] because of differential follow-up relative to randomization between the two arms (63 days for the warfarin group and 84 days for the placebo group).

** Regarding the trial of Ruud and Colleagues, we considered VTE as symptomatic in the presence of all the following three criteria: non compressibility of vein, absence of flow and presence of completely occluding thrombus.

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