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The Pseudo-effect of Vena Cava Filters

To the Editor:

Stein and Matta[1] describe another strong ($P < .001$) statistical association between inferior vena cava filter placement and lower in-hospital all-cause mortality in unstable patients with pulmonary embolism. As in their previous studies that explored the same database,[2,3] the authors conclude that filters may be underused, and even calculate that only 5 patients would need to receive a filter to save one life in patients aged >80 years.[1] We believe that the quality of the available evidence is insufficient to support such interpretations.

No information on comorbidities is available. Hence, major potential confounders (eg, severe sepsis, end-stage cancer, major bleeding, severe cardiac or respiratory failure) that could explain "shock or ventilator dependence" even in pulmonary embolism patients cannot be accounted for in the data analysis. Furthermore, the causes of death also are unavailable. Should filters have any effect on mortality, it would only occur through an impact on fatal recurrent pulmonary embolism. If unstable is a surrogate for massive pulmonary embolism, prospective registries data show that early pulmonary embolism recurrence is an uncommon cause of death in this population.[4]

Most importantly, the timing of hospital admission, pulmonary embolism diagnosis, eventual filter insertion, and death is unknown. Whatever the cause of death, patients who die early (eg, within the first 48 hours of pulmonary embolism diagnosis or admission) have little chance to have a filter inserted, and vena cava filter placement is certainly not a priority for patients in shock. Among patients with massive pulmonary embolism who are followed-up at 3 months, about 80% of all deaths occur within 2 days of pulmonary embolism diagnosis.[4]

Therefore, the likeliest explanation for Stein et al's[1-3] findings could be a selection bias for filter placement: the patients who survived the first hours or days after pulmonary embolism diagnosis could receive a filter, whereas those who died early could not.

Any direct impact of filters on all-cause mortality in pulmonary embolism patients from this database is unproven. Given the available evidence, merely suggesting such an effect appears to be unwise, and could even prove harmful if this leads to more unstable patients receiving unnecessary or useless inferior vena cava filters.

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