

patient with this injury died of intracranial hemorrhage. The other 3 patients who received local thrombolytic therapy were postoperative patients, but the authors did not specify how much time had passed since the surgery; this information is needed to consider the contraindication for thrombolytic therapy as absolute or relative. Six of the patients had cardiorespiratory arrest, but the authors did not indicate which patients had experienced this event. Torbicki<sup>3</sup> has reported that there are very few contraindications to the use of thrombolysis in critical situations, including recent surgery, and that provision should be made to treat bleeding complications immediately. In the setting of cardiac arrest, the benefit of the rapid systemic administration of thrombolytics can be enhanced by the simultaneous treatment of venous thrombi, and the prevention of patient transfer to the catheterization laboratory and the potential complications of percutaneous procedures. The other hospital death described in their series was attributed to rethrombosis after suspension of anticoagulation therapy to repair a complication arising from the percutaneous procedure.

Currently, there is a lack of reliable studies on systemic thrombolysis vs catheter-directed thrombolysis for high- and intermediate-risk PE or on the effect of different catheter-directed percutaneous techniques on survival and bleeding complications.<sup>4</sup> In the absence of reliable studies, it seems advisable to adhere to the recommendations of the clinical guidelines, which consider systemic thrombolysis the treatment of choice for high-risk PE unless absolutely contraindicated. It should be borne in mind that the guidelines state that if thrombolytic therapy is contraindicated, local administration is also contraindicated. Finally, recent surgery could be considered to be a relative contraindication for systemic thrombolysis only in immediate high-risk life-threatening PE and only if provision has been made for potential bleeding complications and their immediate treatment. In the latter setting, a reasonable strategy could be to use low-dose systemic alteplase (50 mg/2 h), which seems to have similar efficacy and

lower bleeding risk than the approved standard systemic dose of 100 mg/2 h.<sup>5</sup>

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## Systemic Thrombolysis for High-risk Pulmonary Embolism Versus Percutaneous Transcatheter Treatment. Response



### Trombolisis sistémica de la embolia pulmonar de alto riesgo frente al tratamiento percutáneo. Respuesta

#### To the Editor,

We read the letter by Pampín-Huerta et al regarding our article<sup>1</sup> with interest. According to the existing evidence, systemic thrombolysis is the treatment of choice for massive pulmonary embolism (PE). Our series included patients with an absolute contraindication and, under these circumstances, the guidelines recommend 2 alternative options: surgical or percutaneous embolectomy, depending on the experience and facilities in each center. Given that the means for surgical treatment are seldom available, even in our center, which is a major hospital in Madrid, Spain, a percutaneous intervention was performed.

Although there are no absolute contraindications for thrombolysis in critical situations, routine clinical practice demonstrates the opposite to be true. In fact more than 60% of the patients with massive PE do not receive this treatment,<sup>2</sup> perhaps because the risk of major bleeding is over 20%, including the 3% risk of intracranial

bleeding, and increases exponentially in those patients who are most unstable.<sup>3</sup> Thus, although the evidence on transcatheter treatment is limited, at the present time, it is the only valid alternative in patients with massive PE in whom thrombolysis is contraindicated or who are at high risk for bleeding.

Common sense tells us, and different registries demonstrate,<sup>4</sup> that 1 fourth or 1 fifth of the in situ systemic dose in the thrombus is associated with a minor bleeding risk; thus, added to the fact that the percutaneous approach enables the fragmentation and aspiration of the thrombus, may prove to be vital in cases of central PE.

At the present time, it is unusual for a single physician to assess the indication and decide on the systemic thrombolysis dose in a case of intermediate- to high-risk PE. The current trend in final decision-making concerning thrombolytic, percutaneous, or surgical treatment involves urgent consensus on the part of a multidisciplinary team in which an interventional cardiologist or radiologist plays an important role.<sup>5,6</sup>

## CONFLICTS OF INTEREST

A. Sánchez-Recalde is Associate Editor of *Revista Española de Cardiología*.

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