Letter to the Editor

Complication after intraosseous needle removal following successful systemic thrombolysis for a massive pulmonary embolism

Sir,

I read with interest your case report describing a complication of intraosseous administration of systemic thrombolysis in a cardiac arrest patient with an underlying massive pulmonary embolism. After some thought and internal reflection, I would propose that the tissue necrosis of the anteromedial leg was not a direct complication of the intraosseous fibrinolytic therapy administration, but more likely related to biologic drug activity complicating intraosseous needle removal after return of spontaneous circulation (ROSC).

Intraosseous line placement is a frequently performed prehospital intervention during the resuscitation of the cardiac arrest victim, as recommended under current ILCOR guidelines when IV access is not readily available. After needle transit through the cortex of the bone, the vascular marrow cavity is entered, allowing prompt access into the vascular compartment; and upon needle removal the same cellular components of the marrow allow for focal thrombosis and hemostasis at the needle insertion site.

In the described patient, following ROSC a femoral venous catheter was inserted and the IO line removed, most likely during the time frame when still under systemic effects of the thrombolytic agent. The Acteplase administered for systemic thrombolysis has a free circulating half-life of 3 min, but the pharmacologic duration of action at the site of fibrin bound plasminogen at the site of thrombus has been described as approximately 1 h in duration. Thus this author theorizes that there was still significant fibrinolytic activity at the needle insertion site into the vascular marrow cavity itself.

I would propose a change in medical care after ROSC in patients following thrombolytic administration through IO access, with conversion of the functioning IO line to a non-flowing saline lock.

There is no hurry to remove the IO needle, and subsequent removal after the effects of systemic thrombolysis is best achieved later. After conversion to a non-flowing saline lock, potential complications such as vasoactive medication extravasation are also removed.

Again, I read with interest this case report and would suggest that the title could conceivably be changed to “Complication after intraosseous needle removal following successful systemic thrombolysis for a massive pulmonary embolism”. As more literature reports of successful resuscitations following thrombolysis appear in the literature, clinicians need to consider delayed intraosseous needle removal following resuscitation to limit potential complications such as the described tissue loss in this case.

Conflict of interest statement

The author does not have any financial, personal, or professional relationships with people and/or organizations that would inappropriately bias this article.

References


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