

LMWHs have an additional advantage over unfractionated heparin: no volume load

To the Editor:

We have read with interest the article of Schmid et al., published recently in this journal, in which the authors state: "Low-molecular-weight heparins (LMWH) have been shown to be safer, more effective and more convenient than unfractionated heparin (UFH) in many clinical situations" [1].

In addition to the advantages of LMWHs usually listed there is another important one which is not usually mentioned [1, 2], and this is that therapeutic administration of UFH requires an intravenous infusion [1, 3]. This "heparin pump" provides patients with a substantial volume load and may be detrimental to haemodynamics, since patients with compromised heart function are at risk when receiving volume load. Otherwise LMWH are given without volume load and have this advantage in all patients with heart failure or prone to it.

Many patients, both medical and surgical, may suffer from volume load by heparin pump. Hospitalised patients are often elderly and left ventricle (LV) diastolic function decreases with age. Hospitalised patients typically have multiple comorbidities which may diminish LV function further. For example, it is well known that diabetes mellitus causes

LV dysfunction both with preserved or with compromised systolic function. Chronic renal failure is also one of the important causes of LV dysfunction [4]. Moreover, sepsis may reduce LV function, etc.

It is important to avoid volume load by heparin pump, particularly in cardiological patients, e.g. with heart failure. In addition, a significant number of patients with acute myocardial infarction (AMI) have compromised LV function, and volume load may destabilise them up to pulmonary oedema. Of 836 AMI patients 31.5% developed heart failure [5].

Clinical intuition, common sense and the situation we eye-witnessed suggest that heparin pump with imminent volume load be avoided. In two patients acute cardiogenic pulmonary oedema was precipitated by heparin pump. One of them was hospitalised in the Neurology Department and the other in the Gastroenterology Department. Following the usual treatment for pulmonary oedema both were stabilised and switched from UHF (heparin pump) to LMWH.

To conclude, not only cardiologists but other colleagues should, when choosing heparin, be careful to avoid heparin pump because of volume load in patients with or prone to left ventricular insufficiency. This is not difficult today, when the choice of anticoagulants is wider. Volume load is typical of UFH given in infusion, a factor worth citing when comparing UFH with other anticoagulants.

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