INVITED COMMENTARY

Big Data, a Big Mistake?

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In their study, Yuo et al. evaluated the outcomes of endovascular and open surgery in more than 20,000 end stage renal disease patients treated for claudication or critical limb ischaemia. The authors concluded that an endovascular first approach should be proposed in end stage renal disease patients as endovascular revascularisation was associated with a lower mortality rate but equivalent long-term limb salvage.[1] This is a really interesting study, but the authors based their findings on a retrospective analysis of an observational administrative database of national practice patterns. Although the strength of such a database is significant, as it covers all United States citizens and legal residents, it depends on the accuracy of the billing codes and on the codes the authors used to identify medical comorbidities.

The authors wanted to compare outcomes between open and endovascular surgery, but the database analysis did not allow the authors to delve deeply into the thought processes that drove the practitioners to choose one revascularisation technique over another, such as clinical presentation or surgical history, lesion level, length of occlusion, calcification, or runoff details. A collaboration between the European Society for Vascular Surgery (ESVS) and the European Society of Cardiology (ESC) led to publication of recent guidelines for peripheral arterial disease.[2] This multidisciplinary consensus document highlighted that the choice of revascularisation technique should depend on medical and anatomical characteristics. Accordingly, cardiovascular prevention and exercise training should be the cornerstones of management in patients with intermittent claudication, while the risk of limb loss should be stratified according to the severity of ischaemia, wounds, and infection, in order to choose the revascularisation technique in patients with critical limb ischaemia. Consequently, even though such a database provides big data, it can lead to enormous bias as medical or anatomical characteristics are not available.

Moreover, the method chosen for revascularisation is likely to have differed depending on the practitioner who performed the intervention: the choice of technique is not the same for a vascular surgeon who is able to perform either open or endovascular surgery as for an interventional radiologist or cardiologist.[3] Therefore, the specialty of the practitioner who performed the intervention clearly had an impact on the revascularisation provided to the patient. Additionally, this observational administrative database provided very limited per-operative information, such as the type of conduit used for open surgery or even the type of technique chosen for endovascular revascularisation. The comparison of outcomes between the two revascularisation modalities is therefore likely to have been affected by such biases.

In conclusion, this is a very interesting study, but using such an administrative database for scientific research may influence the results, and caution should be exercised in the interpretation of results.[4]

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