Real world studies have revealed new information about Direct Oral Anticoagulants (DOACs)

Clinical trials have demonstrated that DOACs are non-inferior to VKAs for treatment of DVT and PE, as well as provided evidence that DOACs protect equally well against recurrent DVT or PE when compared to VKAs on a long term use. However, recent Real world studies have acquired more important data regarding the use of DOACs and revealed some discrepancies between the Clinical trials and Real World studies. Limitations pointed out by Real World studies are explained below.

The discrepancies may be due to the different inclusion/exclusion criteria between the study types such as:

- use of relatively young people with fewer comorbidities in clinical trials
- previous anticoagulation treatment
- low-dosage DOAC therapy
- different follow-up periods (that may affect the adherence of treatment)
- exclusion of patients with atrial fibrillation in clinical trials

1. Safety and efficacy

A German study with atrial fibrillation (AF) patients revealed that VKA therapy was found superior over DOAC treatment with outcomes associated with effectiveness and safety[1]. The patients with VKA therapy had lower all-cause mortality, less acute hospitalizations due to ischemic stroke, and less severe bleedings than the patients with DOAC treatment. In general, DOAC use is associated with a high risk of bleeding. A study with AF patients reported of higher bleeding risk in patients who have been treated DOAC's compared to the patients on warfarin although the benefits in the prevention of ischemic stroke were found similar[2]. In addition, patients who were treated with DOACs and who got mild or moderate traumatic brain injury had a higher risk for intracranial hemorrhage progression, neurosurgical interventions, and mortality compared to patients who were on warfarin treatment before the injury[3].

2. Increased frequency of ischemic strokes and the risk of myocardial infarction

The frequency of ischemic strokes was found higher in patients on DOAC treatment compared to those on warfarin but the incidence for hemorrhages is lower[4]. In addition, one observational study[5] and meta-analysis of randomised trials[6] have suggested that anti-Xa DOACs may increase the risk of myocardial infarction.

3. Poor adherence to DOAC treatment

Several Real World studies have revealed that patients seem to have poorer adherence to DOAC treatment than to VAK treatment [1,7,8]. That may be due to the lack of routine monitoring and the case that dabigatran and apixaban require twice-daily use[1]. One conference talk at the Heart Rhythm Society in 2018 presented the data that patients with low adherence to DOACs had the highest stroke rate in all studied groups[9].

4. Dosing in extremely obese patients

The data regarding the efficacy of DOACS in patients with extreme obesity are still limited and there are not enough clinical data to support definitive treatments decisions on whether to use DOAC or warfarin in patients with BMII > 40 kg/m^2.[10]

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