ESC Congress 2018

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Title : Side effects of regadenoson replacing adenosine for pharmacological stress tests in real world: prospective evaluation in over 5000 patients

Topic : 3.4.2 - Single Photon Emission Computed Tomography (SPECT)

Category : Bedside

Option : No Options

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Introduction: Regadenoson is a highly selective A2A receptor agonist and approved in many countries for myocardial perfusion pharmacological stress imaging. The use of Regadenoson is much easier than that of Adenosine with no infusion pump needed and in contrast to Adenosine, there is no body weight-related dose calculation necessary because a standard dose of 400 µg is applied for all patients. As a vasoactive drug, Regadenoson has side effects, but data regarding this issue are available only from some smaller studies but not from real world application in high volume centers.

Methods: Between February 2012 and January 2018 a total of 25.978 myocardial stress tests with 99m Tc-Tetrofosmin were performed. Due to inability of physical exercise, Regadenoson was needed in 5151 patients (19.8%). The standard dose of 400 µg Regadenoson was injected initially over 10 and later on over 20 seconds. At peak heart rate, 99m Tc-Tetrofosmin was injected. Heart rate, blood pressure and ECG were continuously monitored before and up to 10 minutes after the injection of Regadenoson. All side effects were prospectively documented.

Results: Abnormal scans were found in 15.5% of the Regadenoson patients. The most frequent side effects were shortness of breath (66.2%), headache (21.3%), feeling of warmth (20.7%), feeling of pressure in the chest (18.1%) and in the „stomach" (17.4%). Less frequent side effects were dizziness in 8.7%, nausea (6.6%), feeling of general weakness (2.7%) and sensations in the hands (1.7%). Very rare side effects were dry throat (0.9%), palpitations (1.2%), vomiting (0.5%) and sweating (0.3%). A new 1st degree AV-Block was observed in 0.1%. 25 patients (0,5%) developed a severe drop of blood pressure. In 4 patients (0.08%), a severe symptomatic bradycardia or even life threatening asystole occurred which could be immediately interrupted by administration of Aminophyllin and Atropine. Remarkably, both patients with asystole showed a 1st degree AV-Block at baseline.

Conclusion: In real world cardiology practice, appr. 20% of the patients referred for ischemia testing cannot be adequately physically exercised. Regadenoson for pharmacological stress tests is in general well tolerated with frequent but harmless and transient side effects. Although very rare, life threatening asystole or severe bradycardia (0.08%) may occur but can be rapidly treated with Aminophyllin and Atropine. The official instructions for use mention that a 2nd degree AV-Block is a risk factor for the occurence of asystole. According to our experience, however, also patients with a preexisiting 1st degree AV-Block have an increased risk for developing a life threatening asystole, so the physicians should be aware of this and take precautions like having the antidotes ready and not removing the intravenous needle for 20 minutes after the injection.