

Vasodilator stress with adenosine and the gender preponderance for tolerability and manifestation of adverse symptoms: Is there a physiological basis?

Pharmacological stress testing with adenosine and adenosine analogs has been increasingly utilized for stress perfusion imaging over the last decade and now constitutes nearly half of all nuclear cardiology stress testings across the world. The commonly encountered side effects in association with adenosine injection include flushing, chest discomfort, throat, neck or jaw discomfort, abdominal pain, lightheadedness and dizziness, symptomatic hypotension. Two modifications of adenosine stress protocols have evolved in the clinical practice for reducing the adverse effects of adenosine infusion: (a) combination of adenosine infusion with simultaneous low-level exercise¹⁻³ significantly reduces adverse effects of adenosine infusion. In addition, image quality is bettered by increasing heart-to-liver or heart-to-gut radiotracer uptake; the same has been reported with the newer stress agent regadenoson³ (b) reduction in duration of adenosine infusion by 1-2 minutes reduces the duration of adverse effects.

Another observation, which is relatively less highlighted in the literature but an observation that is quite frequent with the practitioners is higher incidence of the symptoms in female population compared to the male counterparts undergoing the vasodilator stress with adenosine. One of the early reports by Thomas et al.¹ had made a mention of this in their results (5.7% vs 1.8%), though this has been largely unreported in subsequent years. This gender preponderance of adenosine-related symptoms during stress testing is a common observation in routine setting: a male patient who can be subjected to appropriate low-level exercise can undergo the entire adenosine stress test without any symptom. The reason for such discrepancy in the incidence is also unexplained at present. Also, there has been no concrete data at present on whether the approaches to reduce side effects such as combination with low-level exercise or shorter infusion

duration equally effective in men vs. women. However, the latter appears more effective in women compared to men due to the higher incidence of symptoms in them. Interestingly, such observation is also being noticed with the newer A-2a specific stressor such as regadenoson^{4,5} (80% in females vs 70% in males); however, the overall tolerability was better and the incidence of symptoms was less compared to adenosine.⁵

Conflict of interest None.

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