Safe nurse-led pre-CTCA beta-blockade administration can be achieved without intensive medical supervision

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Nurse specialists play an important role in the delivery of CT coronary angiography (CTCA) in the acute chest pain setting. The appropriate dosing of oral and intravenous beta-blockers is crucial to achieve the required heart rate at time of scan of 60 bpm or less. A beta blocker dosing protocol was developed at North Shore Hospital as a guideline for prescription. Nurse specialists worked with the developed dosing protocol over 18 months and found that it was necessary, at times, to deviate from the protocol due to patient history, timing of the scan or ECG information to achieve a safe and effective scan.

Methods

We prospectively collected data from August 2011 to February 2013 on the use of beta-blockade in patient preparation for CTCA.

In our institution, nurse specialists with coronary care unit background administer beta-blockers without immediate hands-on medical supervision. A dosing protocol guides the administration of up to 150mg oral Metoprolol tartrate according to baseline heart rate, but can be varied depending on patient status. Up to 30mg intravenous Metoprolol is administered at the time of scanning should heart rate control be inadequate.

Results

Of the 1104 patients prepared for CTCA, 35 patients (3%) did not proceed due to inadequate heart rate control despite maximum beta blockade administration. The analysis excluded 108 patients on regular beta-blocker and 16 patients who had calcium channel blocker for heart rate control. Protocol adjustments occurred in half the patients, with a lower Metoprolol dose given in 388 patients (41%). Subsequent IV Metoprolol is more frequent, compared to those given the suggested dosage. (41% vs. 30%, p=0.0074) Safety is excellent, with rare complications: mild dizziness (1%), hypotension (2%, only 1 case was symptomatic).

Adjustments to the standard oral Beta Blocker protocol always reflect a reduction in the dosage. Protocol deviation is often used in patients where there is either not enough time from preparation to scanning time for the oral BB to take effect or in patients where we are cautious of excessive BB effects for a clinical reason. In these cases it is understandable that the use of IV BB is increased as the onset is quick and the half life is minutes rather than hours.