Wide Variability in the Diagnosis of Critical Coronary Artery Disease in Patients with Non-ST Elevation Myocardial Infarction (NSTEMI): Data for Physicians who Referred Patients for Cardiac Catheterization

Objective

To determine the rate of diagnosis of critical coronary artery disease (CAD) in patients referred for cardiac catheterization (CC) with NSTEMI, analyzed by referring physician.

Practice Points

1. Acute coronary syndrome is caused by STEMI, NSTEMI, and unstable angina. The differentiation between NSTEMI and unstable angina is the presence of elevated troponin levels.

2. For the diagnosis of acute myocardial necrosis (NSTEMI), elevation of high sensitivity troponin above 99 percentile of the upper reference value is required. Additionally, evidence for a serial increase or decrease ≥20% is required if the initial level is elevated.

3. The typical NSTEMI is classified as type 1 involving decreased blood flow to the heart due to CAD. However demand ischemia (type 2) is due to cardiac supply/demand mismatch rather than CAD. The management of type 2 myocardial infarction (MI) is directed primarily at the precipitating cause such as dysrhythmias, severe anemia, severe hypertension, stroke, etc., and cardiac catheterization is unnecessary.

Methods

1. Patients in the APPROACH database who had CC for acute coronary syndrome indicated because of NSTEMI from 2007-2017 were analysed.

2. CAD was defined as ≥1 coronary artery with ≥70% stenosis or ≥50% stenosis of left main coronary artery.

Results

- During the past decade the number of CCs done for NSTEMI has increased from 525 in 2008 to 895 in 2017, an increase of 70.5%.

- The diagnosis of critical CAD in patients with NSTEMI is lower in females than males. (Fig. 1)

- The percentage of male patients diagnosed with critical CAD ranged from 40% to 90% when analysed by referring physician. (Fig. 2)

- The percentage of female patients diagnosed with critical CAD ranged from 30% to 100% when analysed by referring physician. (Fig. 3)

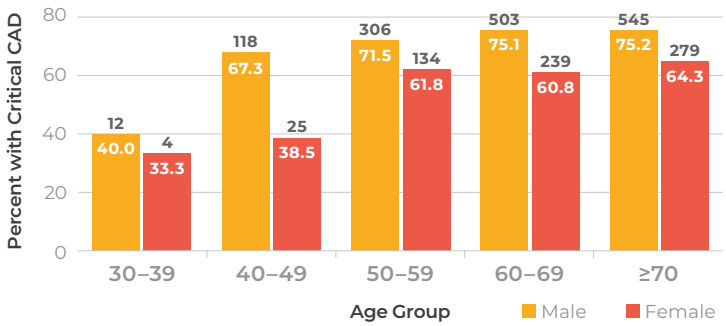

Fig. 1. Percentage of Males and Females with NSTEMI Diagnosed as Having Critical CAD by Age (2014-2017)

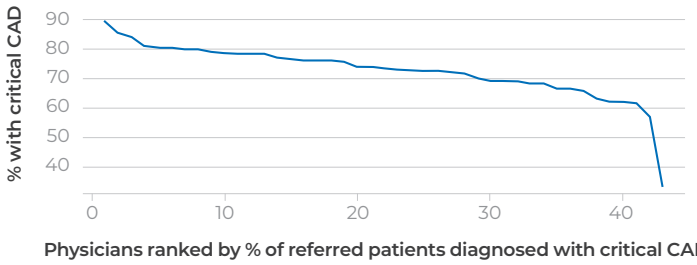

Fig. 2. Percentage of Male Patients with NSTEMI Diagnosed with Critical CAD Ranked by Referring Physician

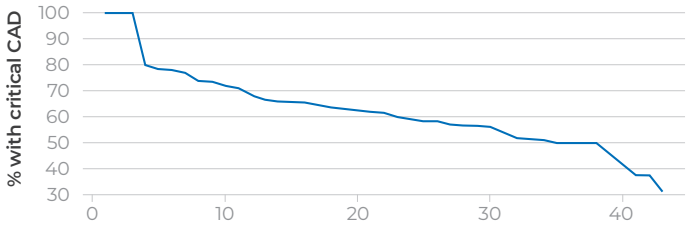

Fig. 3. Percentage of Female Patients with NSTEMI Diagnosed with Critical CAD Ranked by Referring Physician

Conclusion

1. There is wide variability in the rate of diagnosis of critical CAD in patients with NSTEMI when ranked by referring physician.

2. In patients with atypical symptoms for NSTEMI, consideration should be given to alternate causes of elevated troponins prior to ordering a CC, particularly if there is solitary elevation of troponin levels, or serial levels do not reveal ≥20% change in levels, or conditions predisposing to demand ischemia are present.