MENTAL STRESS INDUCED MYOCARDIAL ISCHEMIA AS A MARKER FOR ADVERSE CARDIOVASCULAR EVENTS AFTER MI

PSYCHOLOGICAL STRESS AND CVD

- Psychological stress has been implicated as a trigger of acute coronary events and as a prognostic factor after cardiac events.
- Independent of other prognostic indicators.
- Mechanisms unclear and likely multifactorial.
MENTAL STRESS-INDUCED MYOCARDIAL ISCHEMIA (MSIMI)

- Ischemia: relative lack of blood flow to heart muscle
- Provoked by an acute stress challenge in the laboratory
- 15-50% of cardiac patients
- Clinically silent
- Generally not related to severity of atherosclerotic plaques
- Can occur in absence of conventional stress ischemia
- Little is known about MSIMI after a myocardial infarction (MI) and its role in MI prognosis

Study question: Among young and middle-aged adults with MI, is MSIMI associated with adverse cardiovascular events?
STUDY SAMPLE AND PROTOCOL

• Myocardial Infarction and Mental Stress Ischemia Study 2 (MIMS-2)

• 306 MI patients
  – MI in past 8 months
  – 50% women
  – 65% African American

• Age ≤ 61 yr, mean 50 yr

• [\(^{99m}\text{Tc}\)sestamibi SPECT imaging
  – With mental stress (speech task)
  – With conventional stress testing

• Median follow-up 3 years

• Study endpoint: cardiovascular death or recurrent nonfatal MI

• Independently adjudicated
MSIMI and Risk of a Composite Endpoint of MI/CV Death

- MSIMI developed in 16% of patients

- Ischemia with conventional stress: 26% of patients
- Not significantly related with MI/CV death
- Did not explain association of MSIMI with outcomes
CONCLUSIONS

Summary:
- MSIMI is associated with > twofold higher risk of adverse cardiovascular events after MI
- Independent of demographic, clinical and psychosocial risk factors
- Independent of conventional-stress ischemia

Implications:
- Emotional stress is important in the prognosis of MI patients vulnerable to MSIMI
- Stress-reduction interventions need to be evaluated
- Stress provoked by emotions has distinct mechanisms of risk after MI, compared with physical stress