Maine Medical Center
Department of Emergency Medicine

Journal Club / Research Article Summary - (Adapted from Schultz Table)

Date: 12/20/12
Presenter: Papacostas

ARTICLE:

- Citation: Davide Zanuttini, MDa, et al. Impact of Emergency Coronary Angiography on In-Hospital Outcome of Unconscious Survivors After Out-of-Hospital Cardiac Arrest The American Journal of Cardiology 1723-1728
- Country: Italy
- Funding Sources: Not Disclosed

PURPOSE:

- Research Question(s): What is the impact of an invasive strategy characterized by emergency coronary angiography and subsequent PCI, if indicated, on in-hospital survival of resuscitated unconscious patients with Out of Hospital Cardiac Arrest (OHCA) without obvious extracardiac cause

  - Hypothesis: None explicitly stated.

DESIGN:

- Study Design:
  - Retrospective cohort. 93 consecutive patients between 2008 and 2011 were enrolled. Charts reviewed later.

- Dependent / outcome Variable(s):
  - Survival to Hospital Discharge
    - Neurologic status as assessed by Cerebral performance categories scale. (≤2 indicates recovery without major impairment

- Independent / research Variable:
  - Whether or not emergent coronary angiography and PCI if indicated was performed on OHCA patients.

SETTING / SUBJECTS:

- Research Setting: Major tertiary care center in province of Udine, Italy with coronary care unit and coronary intervention available 24/7.

- Subjects:
  - Study population: 93 consecutive OHCA patients without extracardiac cause between 2008-2011
Inclusion / Exclusion criteria:
- (1) age >18 years;
- (2) sustained ROSC, defined as >20 minutes;
- (3) persistent unconscious state at hospital admission;
- (4) absence of any obvious extracardiac cause (such as respiratory failure, brain injury, metabolic disorder, hemorrhage, drug overdose)

Number (control / intervention groups):
- 66 total patients received angiography
  - Emergent Angiography in 48 patients. 25 received PCI
  - Delayed angiography in 18 patients, 6 of these received PCI
  - No angiography in 27

Study treats people getting emergent angiography as intervention, and delayed or no PCI as control

Demographics: See table 1
- Age 67 +/- 12 years.
- 80% male
- race not specified

Attrition: N/A

METHODS:

Interventions:
- Decision to take patient to cath lab made by treating cardiologist “based on clinical judgment and according to existing guidelines”
- Emergent vs. Delayed vs. No Coronary Angiography
  - PCI if indicated by culprit lesions defined as thrombotic occlusions and irregular eccentric stenoses with a narrow neck, acute angles or craters, and thrombotic apposition resulting in ≥ 50% stenosis
    - Successful PCI defined as <50% residual stenosis with TIMI 3 flow.

Data Collection:
- Retrospective Chart Review

DATA ANALYSIS:
- Level of Data: Continuous variables and Categorical Data
- Statistics Used:
○ Continuous variables assessed using Student’s T test, or Mann-Whitney $U$ test as appropriate
○ Categorical Variables assessed with Chi-square test or Fisher Exact Test
○ Mantel-Haenszel test for time-to-event data with respect to the primary outcome was used for statistical comparison between patients referred to emergency coronary angiography and the remaining study population.
○ Multivariate Cox proportional-hazards analysis was performed to identify the independent determinants of outcome in the overall study population and in patients referred to coronary angiography.
○ Variables with a p value <0.2 at univariate analysis were entered as covariates in the multivariate analysis using the stepwise backward likelihood ratio selection method.
○ For each variable, the hazard ratio and 95% confidence interval were calculated.

- What, if any, confounding variables were controlled for / adjusted for:
  ○ None

RESULTS:

- Brief answers to research questions:
  ○ Does emergent Coronary Angiography improve survival?
    - Study’s conclusions
      1) significant CAD and acute or recent culprit coronary lesions are present in most resuscitated unconscious patients with OHCA without obvious extracardiac cause;
      2) significant CAD and acute or recent culprit coronary lesions are observed in most patients with ST-segment elevation and in a non-negligible proportion of patients with other ECG patterns on post-ROSC electrocardiogram; and
      3) emergency coronary angiography and successful emergency PCI are independently related to in-hospital survival OHCA.

- Additional findings:
  - shorter hospital stay
  - may cost effective because of this

- Other possible explanation for findings:
  Not everybody was taken to cath lab. What was with the other patients, why didn’t they go? Were they just sicker so the interventionalist just figured they were going to do poorly? If so, obviously the group that went to the cath lab did better, because they weren’t as sick. The HR for people
that got angio was 2.3, and 2.52 if you got PCI. You’d expect the ones to get PCI to do much better because ostensibly they had a treatable cause.

- **Limitations?**: Retrospective, no true intervention/control group.

**IMPLICATIONS FOR PRACTICE:**
- **Applicable to this clinical practice**:
  - Don’t think ready for prime time
  - Hypothesis generating study

- **Feasibility (cost, resources, etc)**:
  - Probably doable

- **Clinically Relevant**:
  - Yes

**LEVEL OF EVIDENCE / DECISION FOR USE:**
- Background

- **Level of Evidence**:
  - III Well-designed non-experimental studies