Syncope: When DFO = CDU

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Disclosures

- None relevant to the topic
- Advisory board for Novartis, Janssen, Pfizer

Objectives

- Why: cost savings, standardization
- Who: risk stratification
- What: diagnostic work up

Syncope, defined

- Transient loss of consciousness and postural tone
  - Global cerebral hypoperfusion
  - Not primary TBI (although gravity may intervene)
  - Not epilepsy
  - Not drugs
- Spontaneous recovery

Epidemiology

- 740,000 annual visits in the US
- $2.4 B in costs
- Causes range from the benign to the unavoidably fatal

Cost / Utilization

- NHAMCS 2001-2010
- Steady percentage ~1% of all ED visits
- Steady admission rate: ~32%
- Increasing rate of advanced imaging
  - 21% increasing to 45%

Probst, AJEM, 2015

Risk Stratification

Diagnostic certainty

- Sometimes it is easy…
  - Septic shock
  - MI
  - PE
  - GI Bleed
  - Hypovolemia
  - HOCM
  - Obvious arrhythmia

Disposition

- Sick = ICU / CCU, not CDU
- Not sick: simple vasovagal in the young – go home.
- Massive number without immediately apparent cause
- Who's at risk?

Risk Stratification - Guidelines

- ESC High Risk
  - Previous HF, MI
  - Exertional
  - Palpitations
  - Family Hx
  - ECG blocks
  - Prolonged QT
  - WPW
- AHA High Risk / <30 day
  - Male
  - Age>60
  - HF, CVA
  - No prodrome
  - Palpitations
  - Family Hx
  - Abnormal ECG

Risk Stratification – Scoring

- Multiple individual and meta-analyses
  - No scoring system to date has outperformed gestalt
- Weaknesses include conflation of long vs. short term risk, and not risk stratifying separate strata
- Obvious diagnoses need not be included

Is it really a risk factor?

- IRIS Study
- Cohort of Italian syncope patients
- Cleared out the obviously sick and obviously healthy
  - Blocks, WPW, vtach
  - New murmurs, exertional syncope
  - Brugada, Fam Hx
- Intermediate Risk
  - Known stable CAD or HF
  - Non specific ECG changes
  - Any age
- 30 day follow up

Numeroso et al, AEM, 2016

IRIS

- 250 intermediate risk patients
  - 97 high risk were followed as well
- 0.8% severe event rate in the intermediate group vs. 27.8% in the high risk group
- European study, so LOS data not completely applicable (8.8 days for inpatient stays!)
- Noted shorter / OBS LOS in intermediate group

IRIS

- Age ain't nothin' but a number – no independent effect
- Stable previous disease does not mean admit
- Observational cohort, but intermediate group far shorter LOS and far cheaper

Obs Unit

- Multicenter RCT 5 Obs Units
- Intermediate risk patients
- Protocolized Obs Unit care
  - 2 troponins, echo if cardiac exam abnormal
  - 12 hours of cardiac monitoring
  - 24 hour cap for Obs Unit Care
- Decreased LOS, cost of care
- Similar safety, testing rates, satisfaction

Sun et al, Annals EM, 2014

Obs Unit

- Monte Carlo simulation
- Projected 235K annual admissions avoided
  - >$100M annual savings
  - Reduction of inpatient bed hours by 4.3M

Baugh et al, Acad EM, 2015

Diagnostic Work Up

Heterogeneity

- One pathway to rule them all?
- Trajectory via initial H&P
  - IV hydration
  - Serial troponins
  - Serial Hgb
  - Cardiac monitoring
  - Serial d – dimers?

A few maybes…

Cardiac Echo

- Normal ECG, normal cardiac exam
  - <1% incidence of abnormality*
- Yield increases with selective ordering
  - 22% in observational cohort series†

* - Anderson, Annals EM, 2012

† - Chiu, JEM, 2014

Provocative cardiac testing

- Scoring systems have not been tested against syncope (as opposed to chest pain) as the driver
  - HEART Pathway, EDACS, etc
- Yield increases with impaired EF, known CAD, known valve disease (3% vs. 16%)
  - May be reasonable in this cohort
- Exertional syncope if negative TTE

Po, *Echocardiography*, 2015

Outpatient monitoring

- Holter – 3 days
- Patch – 10-14 days
- External loop recorders 2-6 weeks
- Implantable cardiac monitors 2-3 years

Tilt Table

- May have a role as outpatient
- Acute care goal: find bad things
- Outpatient goal: establish a diagnosis

Conclusions

- Don't admit them all
  - Home if not sick
  - Admission for definite
- CDU ideal for intermediate cohort
- H&P determines trajectory, testing