Is There a Role for Vascular Surgeons on PERTs

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CASE
• 67 year old female
• 1 month s/p sigmoidectomy
• 1 week s/p chemo
• Day #4: PEA arrest - CPR
• BP 126/69 on Levophed
• Line - Groin Hematoma
• Transferred to PUH intubated

What would the treatment be 3 years ago?
• Acute Massive PE
• Recent CPR
• Right groin hematoma
• Thrombocytopenia
• Heparin alone (± IVC Filter)?
• Cardiac Surgery?

Disclosures
• Speaker, Boston Scientific
• No relevant conflicts for this talk

CASE
• RV strain
• RV hypokinesis
  (Mc Connell sign)
• Troponin 0.38
• BNP – 3,400
• H/H: 9.5/29.4
• PLT: 85

NOBODY WOULD CONSIDER CALLING A VASCULAR SURGEON
### Systemic Thrombolysis

Thrombolysis for Pulmonary Embolism and Risk of All-Cause Mortality, Major Bleeding, and Intracranial Hemorrhage

A Meta-analysis

“Systemic thrombolysis vs. AC is associated with lower mortality (OR 0.53) but more major bleeding events (OR 2.73)”

- **Mortality**: 47% Relative Risk Reduction
- **Major Bleed**: 9.2%
- **Stroke**: 1.5%

Chatterjee et al JAMA 2014

### Catheter Directed Interventions

Randomized, Controlled Trial of Ultrasound-Assisted Catheter-Directed Thrombolysis for Acute Intermediate-Risk Pulmonary Embolism

“In intermediate-risk PE ultrasound assisted catheter directed thrombolysis was superior to heparin alone in reversing RV dilatation at 24 hours, without an increase in bleeding events”

Kucher et al Circulation 2014

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(US National Inpatient Sample)

### Catheter Interventions for PE

- Standard Catheter Thrombolysis
- Ultrasound Assisted Thrombolysis
- Percutaneous clot extraction

When and how?

Who is the PE Interventionalist?

### PE Treatment in Real World

- No standard approach
- Strategies all over the map
  - No consistency in decision making
  - No single team and no clearing house
  - No centralized location
  - No systematic evaluation of results

### Previous Paradigm - Chaos

- Severe PE Identified
- Hospital Unit
- Referring Hospital
- Vascular Medicine/Cardiology
- Interventional Radiology
- Thoracic Surgery
- ED/Floor Team
- Pulmonary Medicine/Hematology
- Vascular Medicine/Cardiology
- Interventional Radiology
- Thoracic Surgery
**PERT: Pulmonary Embolism Response Team**

Multidisciplinary effort to improve care & outcomes in patients with acute PE

- Improve patient care by standardizing PE treatment
- Facilitate multidisciplinary consultation and rapid mobilization
- Outpatient follow up: Post-PE clinic
- Regular meetings to discuss cases
- Facilitate research (PE registry & trials)
- National PERT consortium

**Methodologic Rationale for PERT**

The Heart Team Concept

- Each member of the HT can contribute a distinct perspective: "cognitive interchange"
- Members contribute technical expertise
- Now endorsed in Guidelines

The MGH PERT Paradigm

Cardiology
Cardiothoracic Surgery,
Echocardiography
Emergency Medicine
Hematology
Pulmonary and Critical Care
Cardiac Radiology
Vascular Medicine & Intervention

UPMC PERT

- Ward PE Deaths raised the need for a "higher level care"
- Safety Committee Investigation
- Initiation of an Acute PE Team in 2013
- MGH Influence

UPMC PERT 2014

UPMC PERT Multidisciplinary Collaboration
How to Consult the PUH PE Team

- UPMC MedCall 412-647-7000 and ask for acute PE Team consult
- UPMC MedTrack: type PE Team

Quick Case & Patient Review: Consultation of on-call interventional teams

PE Team discusses treatment options

A stepwise Management to Acute PE

Risk Stratification

Triage to Appropriate Unit

PE Team consults specialists

Consult Specialists

Initial Treatment

Outpatient Follow up

UPMC PERT DATA

2014 to Date

Total PEs: 890
Total Activations: 364
Low Risk: 96 (17%)
Submassive: 212 (33%)
Massive: 50 (89%)
Clot in Transit: 7 (64%)
No PE: 6
Mean Age: 60 ± 19

Interventions:

- Anticoagulation only:
- Systemic Lysis: 34
- Catheter Lysis: 79
- Catheter Thrombectomy: 7
- Surgical Thrombectomy: 12
- ECMO: 6

PERT and Interspecialty Conflicts

- A unique challenge of PERT: Different specialties that are qualified to provide same therapy → Conflicts & Tension
  - Assuming equal competency
  - Balanced Distribution of calls and procedures
  - Equal time commitment (nights and weekends)
  - Unselfish PERT leadership: care to be inclusive

PERT and Vascular Surgeons

Who is the Pulmonary Interventionalist?
PERT and Vascular Surgeons

Who is the Pulmonary Interventionalist?
- PE intervention is not owned by any specialty
- Depends on each individual institution and local policies and expertise
- Whoever answers the call first

Why Vascular Surgery?
- Catheter, Clinical & Critical Care Skills
- Medicate – Operate – Dilate (Russel Samson)
- DVT management
  - 40% of iliofemoral DVT patients have clinical PE
  - PERT activation gateway to care for many of these patients
- Non participating surgeons may lose access to venous interventions (Lysis, thrombectomies, stents, IVC filters etc)
- We understand the disease process
  - Full management spectrum

SUNSET PE trial (UPMC)
- Physician initiated RCT
  - Efthymios Averginos, Rabih Chaer Co-Pis
- Endorsed by PERT consortium
- Comparing multisidehole CDT to US assisted thrombolysis
  - Long term clinical follow up for clinical and imaging endpoints
  - Identification of patients who will develop pulmonary hypertension (biomarkers, microRNAs) (JOBST Grant AVF)

Nationwide Specialty Involvement

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Suction thrombectomy

Final PA Pressure 49, HR 80

Answer the Call
Innovate the Field
Create & Lead
PERTs
We owe it to our patients