What's the Big Deal about Neuro and Vital Signs after IV Alteplase?

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Disclosures

- None.

Objectives

1. Understand the potential complications post IV alteplase

2. Identify assessment requirements to identify potential complications and reduce the risk of complications

3. Identify the appropriate level of care for IV alteplase patients

Case Study 1

- 82 yo male arrived at OSH at 1613 via EMS as Code Stroke
- Confusion, right facial droop, slurred speech, and balance off
- HO CAD, DM, hyperlipidemia
- 1642 BP 165/95
- LTKW 1530
- CT negative
- Labs normal

Alteplase Criteria

- Carefully selected patients will reduce risk of complications up front
- Treatment with 4.5 hours of Last Time Known Well
- BP < 185/110
- Anticoagulation use
- Bleeding diathesis
- Active or recent bleeding
- Recent Trauma or major surgery
- HO stroke or MI, aneurysm, tumor, AVM
- CT 1/3 cerebral hemisphere

Case Study 1

- Alteplase administered at 1747
- Left OSH at 1800

  NIHSS 11
- During transport BP borderline 180/105
  - Did not receive medication en route
- Directly admitted to ICU about 1840
  - BP 188/95
  - RUE/RLE 4/5 for strength, disorientated, speech clear fluent, no visual deficits, no facial palsy

Post Infusion Assessments

- Vital signs
- BP, HR, RR, O2
  - Every 15 minutes for 2 hours, then
  - Every 30 minutes for 6 hours, then
  - Every hour for 16 hours
- Temp every 4 hours
- BP < 180/105
- Higher blood pressures during the initial 24 hours were associated with greater risk of sx ICH
- If systolic BP >180–230 mm Hg or diastolic BP >105–120 mm Hg:
  - Labetalol 10 mg IV followed by continuous IV infusion 2–8 mg/min; or
  - Nicardipine 5 mg/h IV, titrate up to desired effect by 2.5 mg/h every 5–15 minutes, maximum 15 mg/h

Post Infusion Assessments

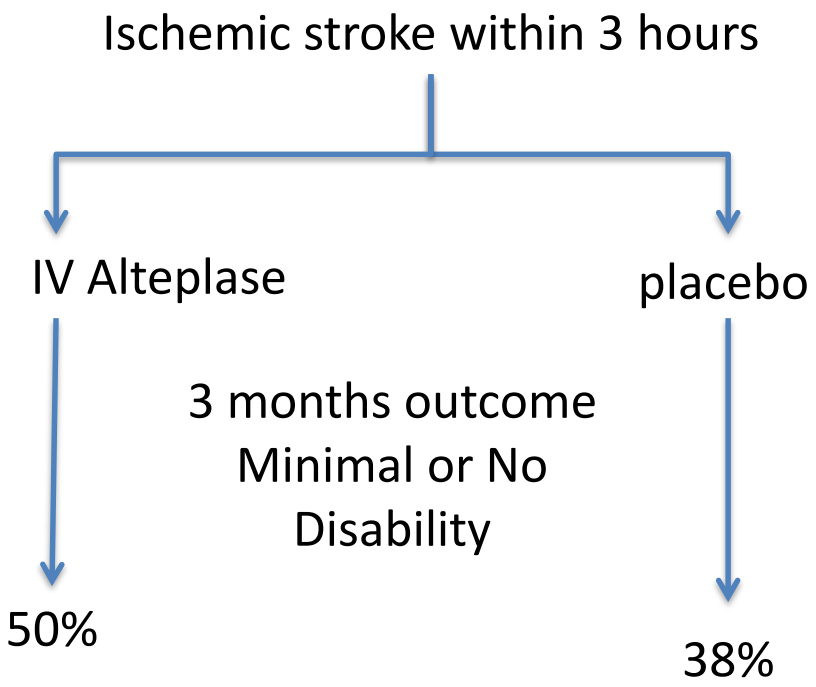
- NIHSS
  - Baseline, 2 hours post treatment, 24 hours post
- Neuro assessment
- LOC, Orientation, speech, motor function/strength, sensation, visual fields and gaze, facial palsy
  - Every 15 minutes for 2 hours, then
  - Every 30 minutes for 6 hours, then
  - Every hour for 16 hours
- Other assessments
  - Disturbed sites, catheters, orolingual edema

Signs and Symptoms of ICH

- Change in LOC
- Headache
- N/V
- Worsening neurologic deficits
- Increased BP
- Late signs of ICP
  - Pupillary changes
  - Cushing's Triad
    - Elevated SBP
    - Bradycardia
    - Respiratory

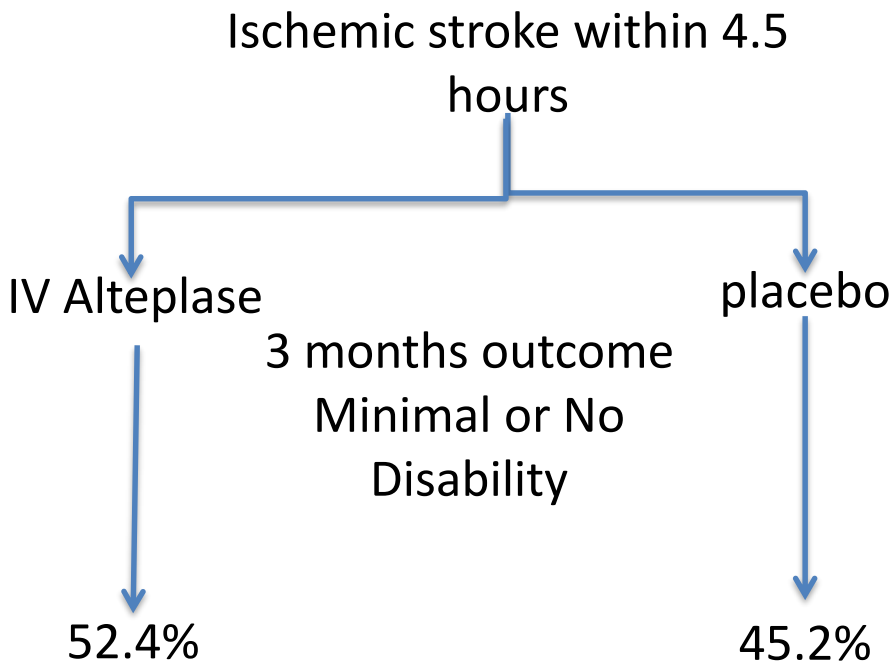
Alteplase

- NINDS-tPA Trial 1995
  - Symptomatic ICH
    - 6.4% vs 0.6%
  - Mortality at 3 months
    - 17% vs 21%



Alteplase

- ECASS-III trial 2008
  - Risk of Symptomatic ICH
    - 2.4% vs 0.2%
  - Mortality
    - 7.7% vs 8.4%



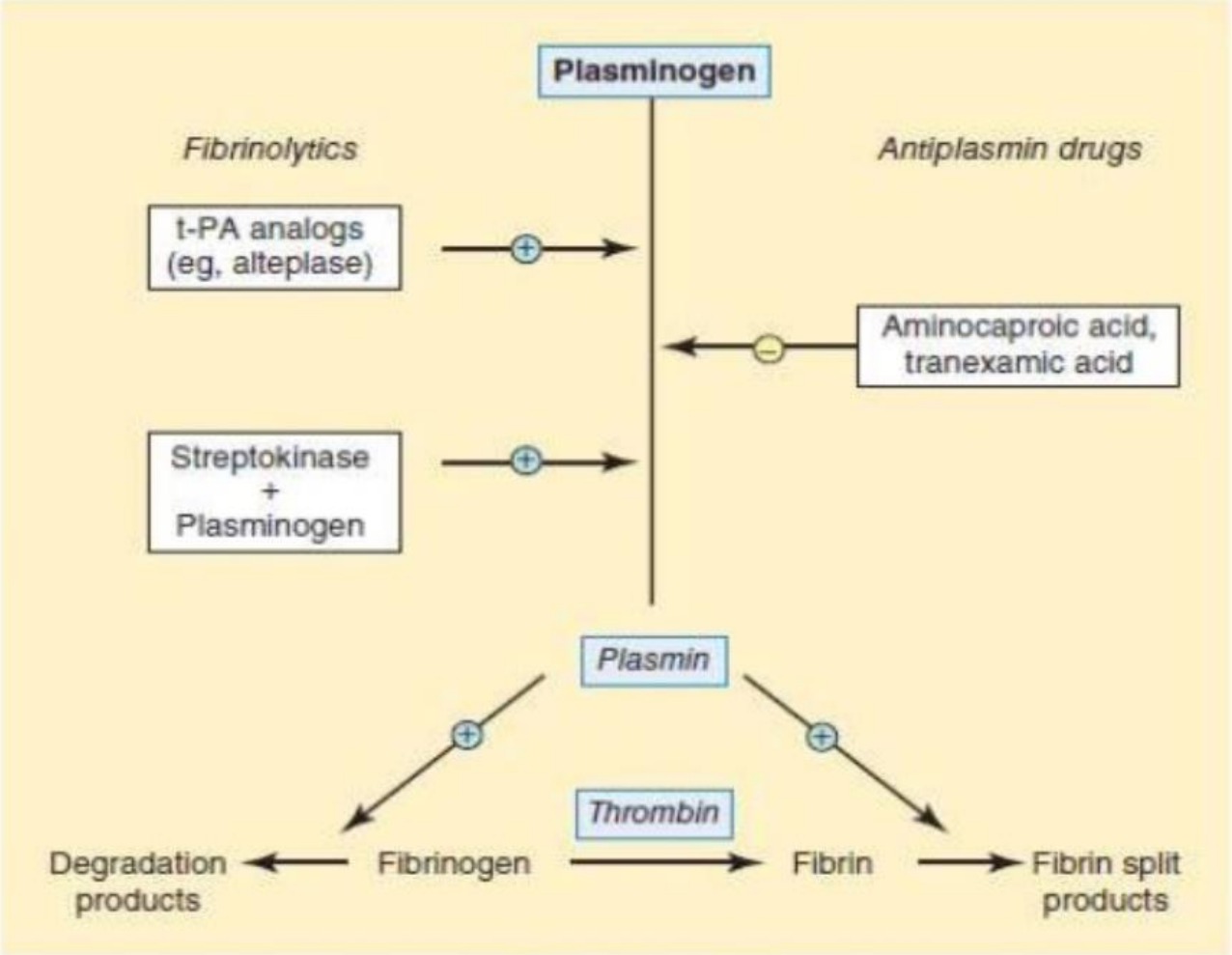
Case Study 1

- 1900 patient began thrashing in bed, yelling for help, stated he cannot see, and severe headache
  - BP 194/112
  - Stat CT ordered
    - Occipital and small frontal lobe hemorrhage
  - NIHSS 11
- Labetalol and Nicardipine given
- 2 units of platelets, 10 units of cryoprecipitate, and tranexamic acid, aminocaproic acid
- NSG consult
- CT in AM
  - Edema
  - Hypertonic saline initiated
- Developed several medical complications
- Discharged to SNF for rehab

Treatment and Management of Intracerebral Hemorrhage Post Alteplase

- Stop Alteplase
- Stat CT
- Labs (coag studies, fibrinogen, platelets)
- Neurosurgery consult
- Replace fibrinogen with cryoprecipitate until fibrinogen >100
- If patient was taking Plavix or platelets <100,00 administer 4-6 units of platelets
- Aminocaproic acid or tranexamic acid

Alteplase Reversal



Complications

- Superficial bleeding
  - Avoid tube insertions, IV's, lab draws
  - Invasive sites
  - Disturbed sites
- Apply direct pressure or pressure dressing to any compressible puncture site
- No aspirin, clopidogrel, dipyridamole, heparin, LMWH, NSAIDs, warfarin or other antiplatelet agents/anticoagulants during and for 24 hours after infusion

Complications

- Internal bleeding
  - Retroperitoneal site
  - GI site
  - GU site
  - Respiratory
- Avoid catheter and NG tube placement
- Assess tachycardia, decrease in BP, pallor, or restlessness, pain

Case Study 2

- 82 yo female presented to OSH at 0935 via EMS
- LTKW 1030 with right facial droop and slurred speech
- HO HTN, Hyperlipidemia, Afib, CAD, Peripheral stent 11 days prior
- Sx resolved at OSH
- CT normal
- Transferred to SCH arrived 1235
- En route pt developed symptoms again
- INR 1.6
- NIHSS 4
- Alteplase given at 1305
- Increased weakness during infusion
  - Stat CT normal

Case Study 2

- 1615 N/V, divergent gaze, pupil changes
- Stat CT- normal
- 1728 continued with N/V and complaints of abd pain
- Hypotensive
  - IVF and Dopamine started
- CT abd/pelvis
  - Intramuscular and pelvic side wall hematoma
- 1731 Hgb 9.4, 0035 Hgb 8.4, 0648 Hgb 7.5
  - Received 2 units of PRBC
- 1040 Hgb 6.8
  - Received 2 units of PRBC
- Hematoma stabilized
- Failed swallow and developed aspirate pneumonia
- Severe leg pain and abd pain
  - DVT
- Therapy recommending further rehab, mRS 4
- Patient requested Palliative Care consult

Case Study 3

- 92 yo female arrived at 1227 via EMS as Code Stoke
- Dysconjugate gaze, blurred vision, right arm and leg weakness
- LTKW 1000
- HO Afib- only ASA, Hyperlipidemia, Hypertension, type II diabetes mellitus
- BP 120s-130s HR 80-145
- CT neg
- Labs normal
- Alteplase given at 1326
- 1400 Swelling of the upper lip
- Alteplase stopped
- Diphenhydramine administered 1413

Orolingual Angioedema

- 1-5 %
- Angiotensin-Converting Enzyme inhibitor
- Insular and frontal cortex
- Occurs within minutes to 2 hours
- Contralateral to the stroke
- Assessment and Treatment
  - Assessment of tongue, lips, and oropharynx
  - Discontinue alteplase
  - Antihistamine
  - Steroids
  - Monitor airway
  - Prepare for intubation

Case Study 3

- 1425 Pt having difficulty finding words. Alert to self. Restless
- CT neg for hemorrhage
- Received IV lorazepam
- 1320 L arm bleeding from lab draw at. Bruising to L hand. Bruising and swelling to the R eye
- 2108 swelling gone
- Transferred to NPCU at 2210
- 1/9 MRI 0800
  - Acute ischemia involving the left parietal lobe
  - Small amount of acute vs chronic hemorrhagic products

Case Study 3

- Nursing repeated bedside swallow and patient passed
- SLP confirmed
- Started on coumadin for afib
- Patient was on ACE inhibitor
- 1/11 discharged to a subacute for rehab
- Modified Rankin Score on DC -1

Patient Care

- PSC
  - Better clinical outcomes
  - Lower mortality and morbidity
  - Decreased LOS
  - Sustained improvements in quality stroke care
- Admit to Intensive care or stroke unit for monitoring.
  - 25 % of patients will have complications in first 24 hours
  - Step down VS ICU
  - Decreased LOS, Cost, and safe

St Cloud Hospital Experience

- Feb 2016 transfer out of ICU after 8 hours
- Criteria
  - No neurological decline
  - Hemodynamically stable
  - Stable CT
- 28 patients
  - 1 (3.5%) developed asymptomatic petechial hemorrhage
  - 7 (25%) had one or more episodes of hypertension after the transfer, but were successfully managed in the step-down unit
  - No patients had adverse events or transfer back to the ICU
- Continued the protocol and analyzing additional data

Questions

References

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