



# Papers from 2018 That Changed My Practice: *Inpatient Edition*

Jon Sweet, MD, FACP

# Disclosures

- None

# Case 1

- 59-year-old man is admitted with sepsis due to cellulitis of the right leg
- HTN, T2DM, OSA on CPAP
- **Meds:** amlodipine, chlorthalidone, metformin, insulin. You start vancomycin and piperacillin-tazobactam
- Later the nurse calls with BP 210/100 and pulse 68
- Creatinine is normal. No headaches, visual changes, angina, dyspnea, or pain other than the right leg
- RN requests orders for additional as-needed HTN meds



Which of the following is the most appropriate initial order for this patient with hypertensive urgency?

- A. Repeat BP after at least 30-60 minutes
- B. Clonidine 0.1 mg PO
- C. Captopril 25 mg PO
- D. Hydralazine 10 mg IV
- E. Labetalol 20 mg IV

## Acute Treatment of Hypertensive Urgency

Anthony C. Breu, MD<sup>1,2\*</sup>, R. Neal Axon, MD, MSCR<sup>3,4</sup>

- Severe asymptomatic/uncomplicated HTN (SBP  $\geq 180$  or DBP  $\geq 120$ ) is very common, as is treatment
- The benefit of treatment accrues over months to years, not hours
- Overly large reductions in BP are common and have been associated with stroke and MI

# Guidelines

- **JNC 7:** “the term ‘urgency’ has led to overly aggressive management of many patients with severe, uncomplicated HTN. Aggressive dosing with IV drugs or even oral agents to rapidly lower BP is not without risk.”
- **2017 ACC/AHA:** “no indication for referral to the emergency department, immediate reduction in BP in the emergency department, or hospitalization...”

# A Better Plan

1

- Confirm no acute end-organ damage

2

- Address treatable causes (missed/held HTN meds, pain, nausea, delirium, withdrawal, etc.)

3

- Repeat after at least 30-60 minutes of rest with proper technique

4

- Consider augmenting home HTN regimen

# Pearl

- The risk-benefit ratio of acutely lowering BP generally favors withholding acute treatment in asymptomatic patients





# Case 2

- 70-year-old man evaluated for fevers, confusion, behavioral changes for 2 days
- Aspirin, clopidogrel, carvedilol, lisinopril, atorvastatin
- **T 103.2 F**, HR 110, BP 120/70, RR 22
- Mild neck stiffness? Rest of exam non-focal.
- **WBC 14,000**. BMP, urinalysis, CXR normal.



# What is the most appropriate initial strategy for this patient on DAPT?

- A. Urgent lumbar puncture
- B. Transfuse 1 unit of platelets, then LP
- C. Blood cultures, then ceftriaxone and azithromycin
- D. Cultures, then ceftriaxone, vancomycin, ampicillin and acyclovir



# Safety of Lumbar Puncture Performed on Dual Antiplatelet Therapy

- LPs often avoided in DAPT; **no data**
- Spinal hematomas in setting of spinal *anesthesia* are rare (2 per 100,000 cases)
- Risk of epidural hematoma in SAAPT  $\cong$  0%
- Retrospective review of 100 consecutive LP on DAPT (ED, inpatient, outpatient)

# Results (n=100)

- 98% patients taking ASA 81 + clopidogrel 75
- 76% outpatient, 24% ED/inpatient (residents)
- Gauge: 20 (69%), 22 (25%), 18 (6%)
- 8% traumatic ( $>100$  RBC/ $\mu$ L)
- 4% bloody ( $>1,000$  RBC/ $\mu$ L)
- Both of these are c/w literature ( $\sim 10\%$  for bedside, 3.5% for fluoroscopy-guided)
- No complications

# Pearl

- Lumbar puncture on DAPT appears to be safe when procedure delay might result in diagnostic delay, diagnostic uncertainty, or an elevated thrombotic risk (e.g., ACS or stent)



# Case 3



- 69 yo woman with HTN and T2DM has increasing dyspnea and palpitations over several days
- No chest pain, infectious symptoms, or VTE risk factors
- Amlodipine, chlorthalidone, metformin
- AFIB with RVR up to the 140s. BP 120/80.
- Routine labs, troponin, D-dimer are unremarkable

# What is the best initial plan?

- A. Synchronized cardioversion
- B. IV Diltiazem or beta-blocker
- C. IV Diltiazem or beta-blocker **plus** IV digoxin
- D. IV Diltiazem or beta-blocker **plus** IV magnesium

# Low-dose Magnesium Sulfate Versus High Dose in the Early Management of Rapid Atrial Fibrillation: Randomized Controlled Double-blind Study (LOMAGHI Study)

- Randomized, controlled, double-blind clinical trial in 3 university hospital ED, ITT analysis
- Rapid AF (>120 beats/min)
- 450 patients, mean age 67, 60% women
- **Contraindications:** SBP <90, Cr >2.0, acute MI, acute HF (NYHA 3-4)
- 100 mL saline vs low-dose (4.5 gm) vs high-dose ( 9 gm) MgSO<sub>4</sub> + usual AVN agents
- **Primary** outcome: ventricular rate ≤90 or reduction of VR by ≥20%
- **Secondary** outcomes: time to therapeutic response, conversion to NSR, adverse events



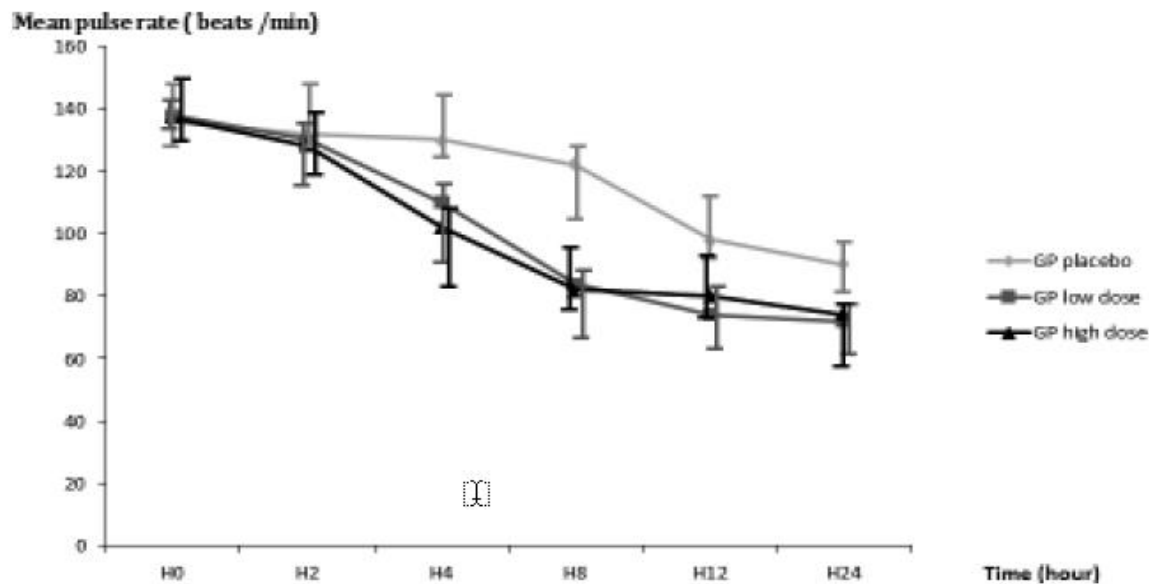


Figure 2. Mean heart rate in relation to time in patients treated with low-dose  $MgSO_4$ , high-dose  $MgSO_4$ , and placebo. Repeated heart rate monitoring showed a significant and greater reduction of heart rate in both magnesium groups compared to placebo. \* $p < 0.05$  versus baseline; § $p < 0.05$  versus placebo. GP = group;  $MgSO_4$  = magnesium sulfate.

## Rate Response (<90 or 20% decrease) from Baseline

	Placebo	4.5 gm Mag	9 gm Mag
4 h	43.6%	64.2% *	59.5% *
24 h	83.3%	97.9% *	94.1% *

## Mean Resolution Time

Placebo	4.5 gm Mag	9 gm Mag
8.4 h	6.1 h *	5.2 h *

\*  $P < 0.05$

## Conversion to Sinus Rhythm

	Placebo	4.5 gm Mag	9 gm Mag
4 h	6.7%	12.1%	7.8%
24 h	10.7%	22.9% *	13.0%

# Adverse Effects

Table 3  
Adverse Effects

	Placebo	Low-dose Magnesium	High-dose Magnesium
Flushing	1	6	18*
Hypotension	1	1	2
Bradycardia	1	1	1
Total	3	8	21*

\* $p \leq 0.05$  versus placebo and low-dose group.

# Pearl

- IV magnesium seems to have a beneficial synergistic effect when added to AVN blockers for rate control in rapid AFIB



# Case 4

- 80 yo man from Memory Care with new fevers, new listlessness, intermittent agitation
- **T 102.2 F**, HR 120 (sinus), BP 130/90
- **WBC 16,000**, mild AKI, UA with TNTC WBC
- Pan-sensitive E coli grows from urine and blood
- Within 48 hours of treatment with ceftriaxone, he is near baseline per family, afebrile, and leukocytosis has resolved



# What is the most patient-centered plan going forward?

- A. Repeat blood cultures; treat for 7 days total
- B. Repeat blood cultures; treat for 14 days total
- C. Do not repeat blood cultures; treat for 7 days total
- D. Do not repeat blood cultures; treat for 14 days total

# Seven versus fourteen Days of Antibiotic Therapy for uncomplicated Gram-negative Bacteremia: a Non-inferiority Randomized Controlled Trial

Dafna Yahav, MD ✉, Erica Franceschini, MD, Fidi Koppel, BA, Adi Turjeman, MA,

- Randomized, multicenter, open-label, non-inferiority trial of 604 patients in 3 centers
- Source was urinary in 68% (but also intra-abdominal, respiratory, CLABSI, SSTI, unknown). Community or hospital-acquired. 67% ≥65 years
- **Exclusions:** uncontrolled focus, polymicrobial, immunosuppressed, Salmonella/Brucella
- **Enterobacteriaceae in 90%**
- Afebrile and hemodynamically stable for at least 48 hours with no uncontrolled focus of infection
- ABX and oral switch date determined by physician
- 7 (intervention) versus 14 (control) days antibiotics
- **Primary outcome** at 90 days: composite of all-cause mortality; relapse, suppurative or distant complications; re-admission or extended hospitalization (>14 days)

# Outcomes

Outcome	7 days	14 days	P value
Primary outcome	<b>45.8%</b>	<b>48.3%</b>	<b>0.527</b>
90-d all-cause mortality	36%	32%	0.702
28-d mortality	4.9%	4.4%	0.753
14-d mortality	2.3%	1.3%	0.288
Readmissions	38.9%	42.6%	0.363
Needs assistance or bedridden at 30 d	51.4%	57.2%	<b>0.031</b>
Return to baseline activity	2 weeks	3 weeks	<b>0.010</b>
Total ABX days (day 90)	10	16	<b>&lt;0.001</b>



## Follow-up Blood Cultures in Gram-Negative Bacteremia: Are They Needed?

- GNB bacteremia typically transient & rapidly responsive to appropriate ABX and source control
- Analyzed 500 episodes of bacteremia
- For GNB: 17 follow-up BCX (FUBC) required to yield 1 positive result
- Positive GNB FUBC **not** associated with adverse outcomes
- FUBC for GNB adds little value and can increase costs, LOS, unnecessary consultations, inappropriate use of ABX

# Pearls

- In patients hospitalized with Gram-negative bacteremia due to Enterobacteriaceae and achieving clinical stability before day 7, an antibiotic course of 7 days was non-inferior to 14 days
- Repeating blood cultures in many cases of uncomplicated gram negative bacteremia is low-value



# Summary

1. Hypertensive “urgency” is often overtreated
2. LP on DAPT appears safe
3. IV magnesium seems to improve rate control in rapid AFIB
4. 1 week of ABX is effective for many stable patients with Gram-negative bacteremia due to Enterobacteriaceae



# Thank you!

[jmsweet@vt.edu](mailto:jmsweet@vt.edu)

**VTC** | Virginia Tech Carilion  
School of Medicine

