

CARDIAC EFFECTS OF DRUGS OF ABUSE

Christopher B. Colwell, M.D.

Zuckerberg San Francisco General Hospital and Trauma Center

Department of Public Health, Division of EMS

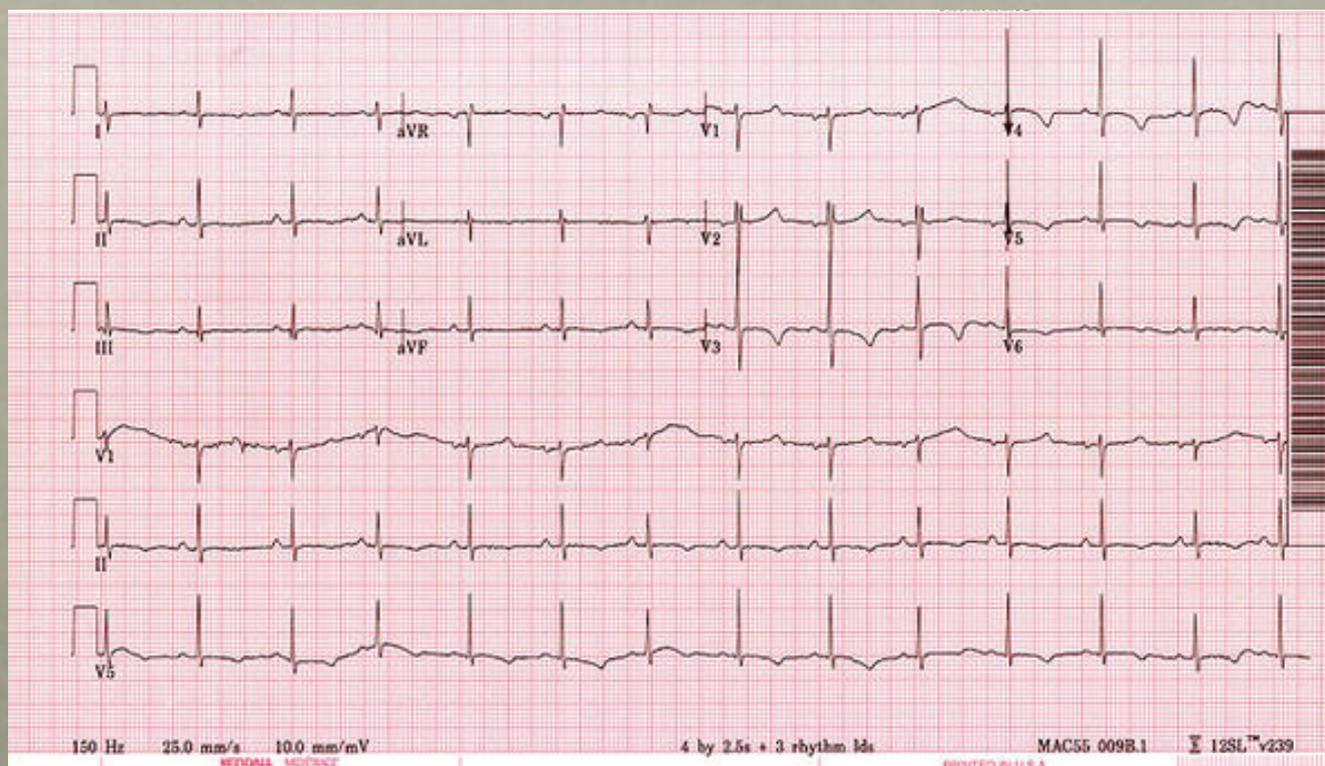
PILL PARTY



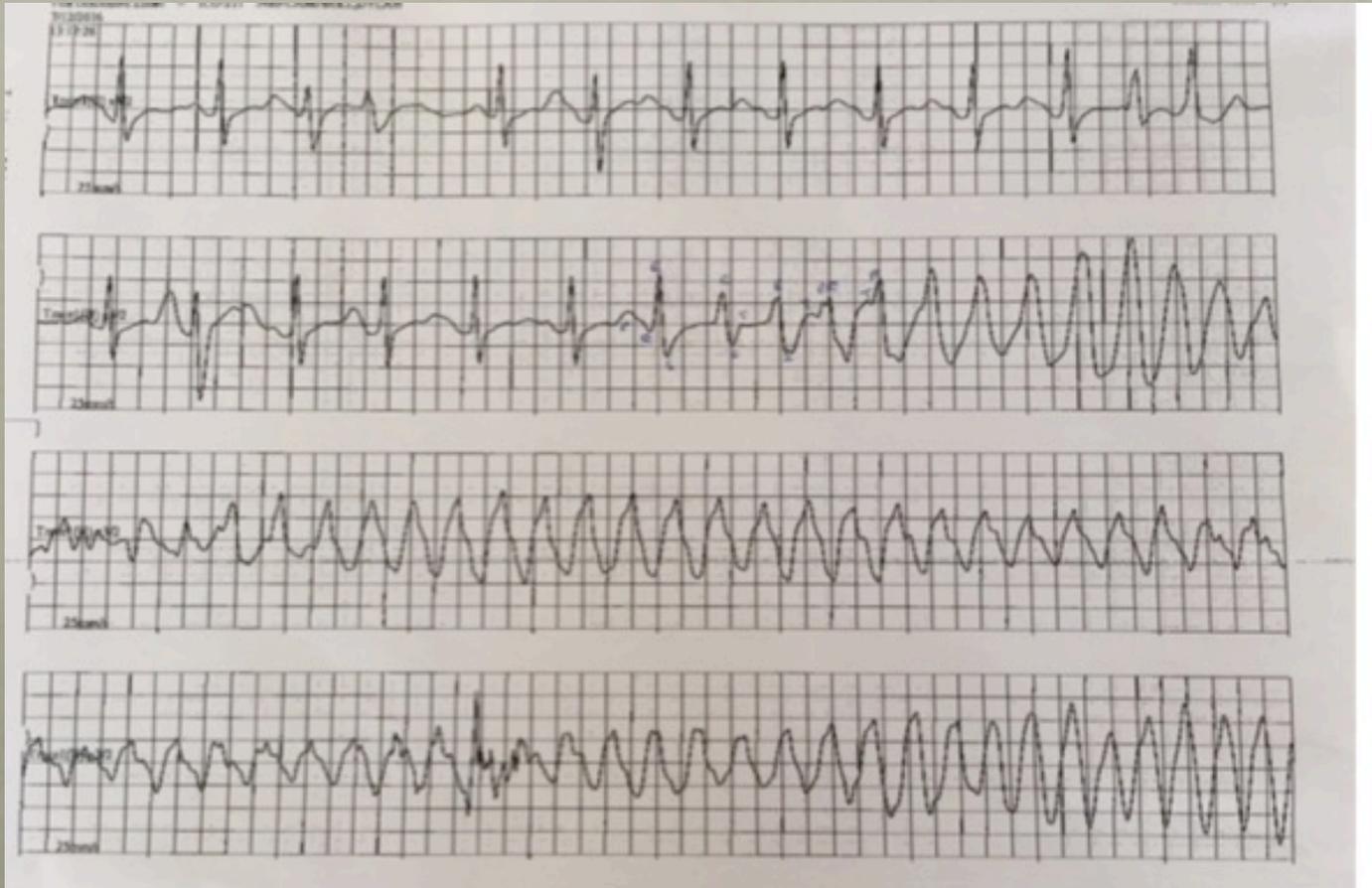
CASE # 1

- 37 year old male with PMHx sig for opiate abuse presents with cc of syncope x 2
- 138/72, 118, 22, 36.8 98% RA
- Exam is unremarkable
- EKG

EKG

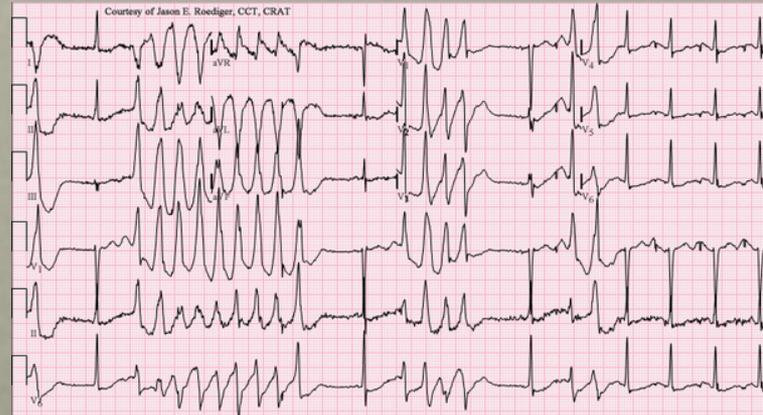


EKG # 2



TORSADE

- Loperamide
 - Imodium
- Methadone
- Methamphetamines
- Bath salts

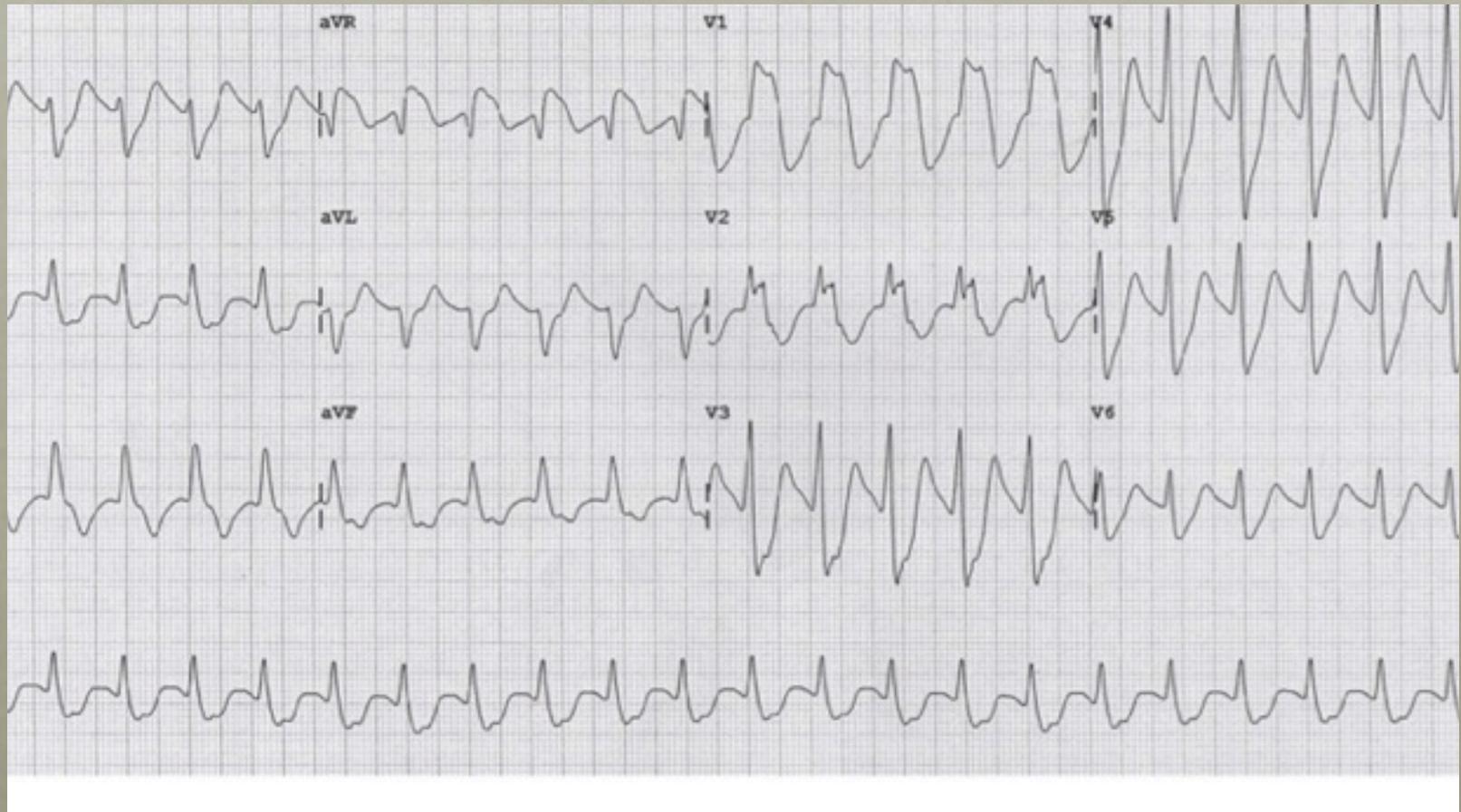


CASE # 2

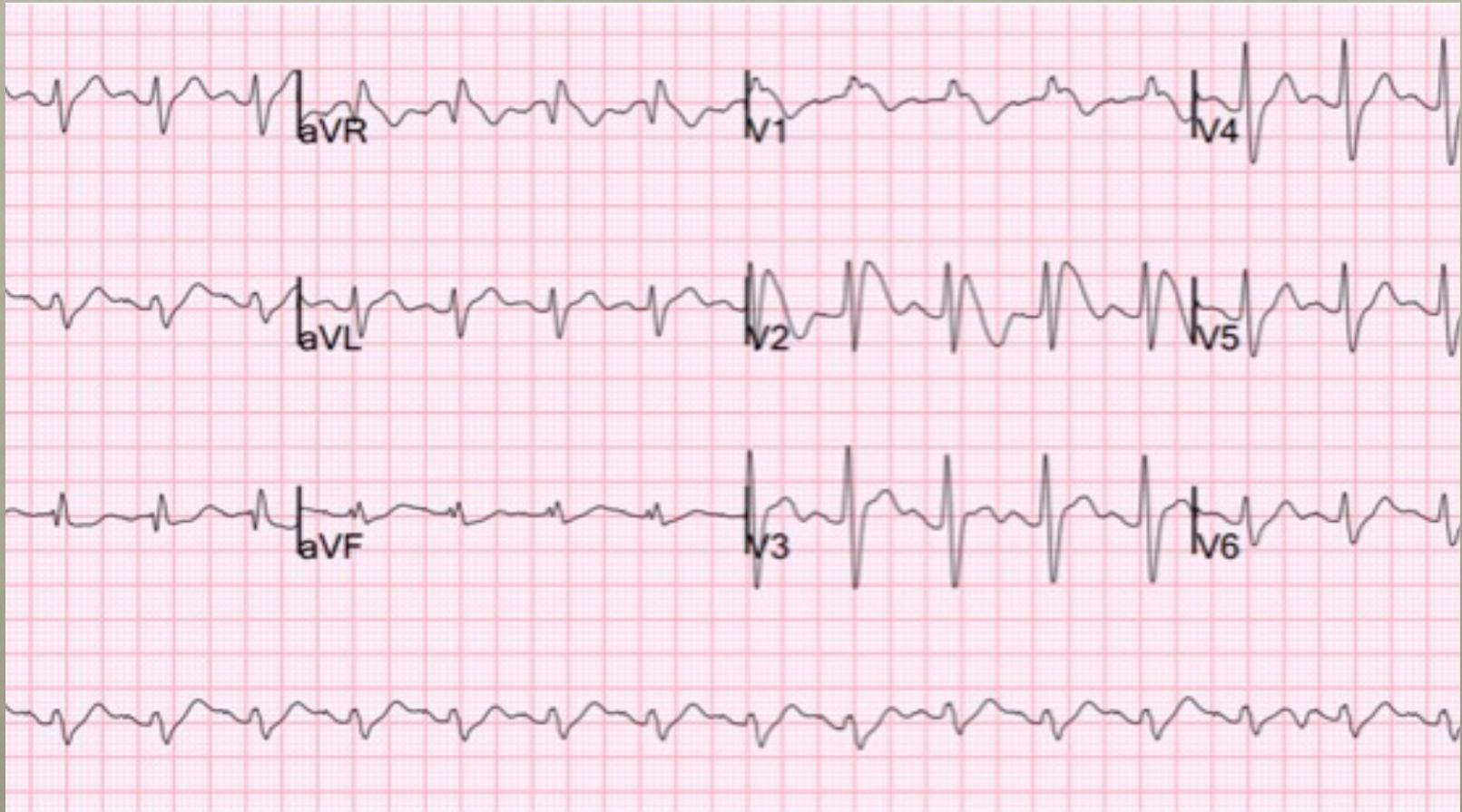
- 40 year old female with agitation
- Visiting from out of town
 - Went to a party
 - Took every marijuana product she could find
- 168/110, 132, 22
- Plan was observation



EKG



REPEAT EKG

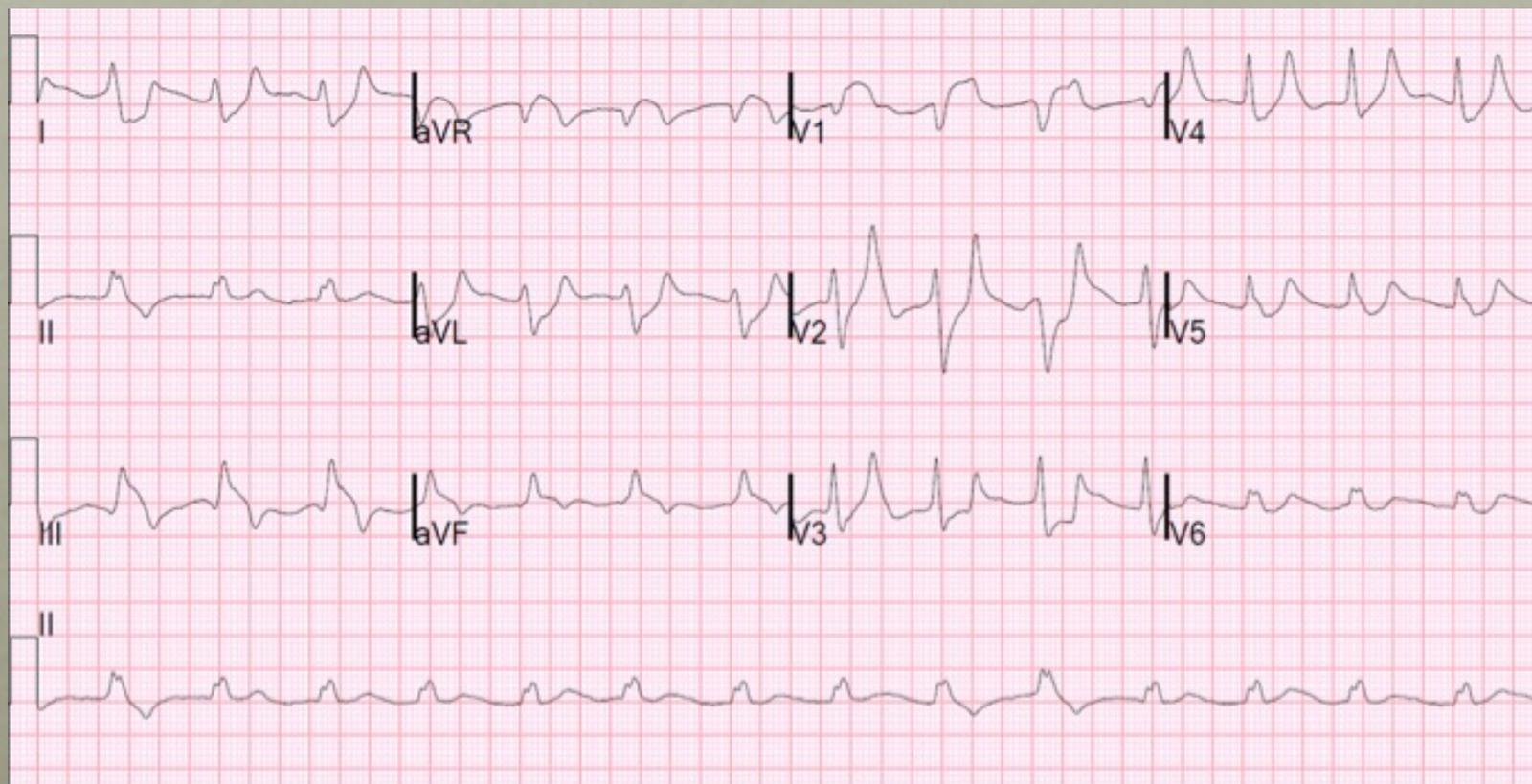


CASE # 3

- 23 year old male with altered mental status after bath salt ingestion
- 163/101, 128, 24, 100%
- Observation, reassessment



EKG



CASE(S) # 4

- Patient #1
 - A 36 year-old female presents with dizziness, palpitations, difficulty breathing and total body tingling, one hour after smoking “marijuana”
- Patient #2
 - A 26 year old male presents with a complaint of paresthesias and syncope, one hour after ingesting marijuana brownies

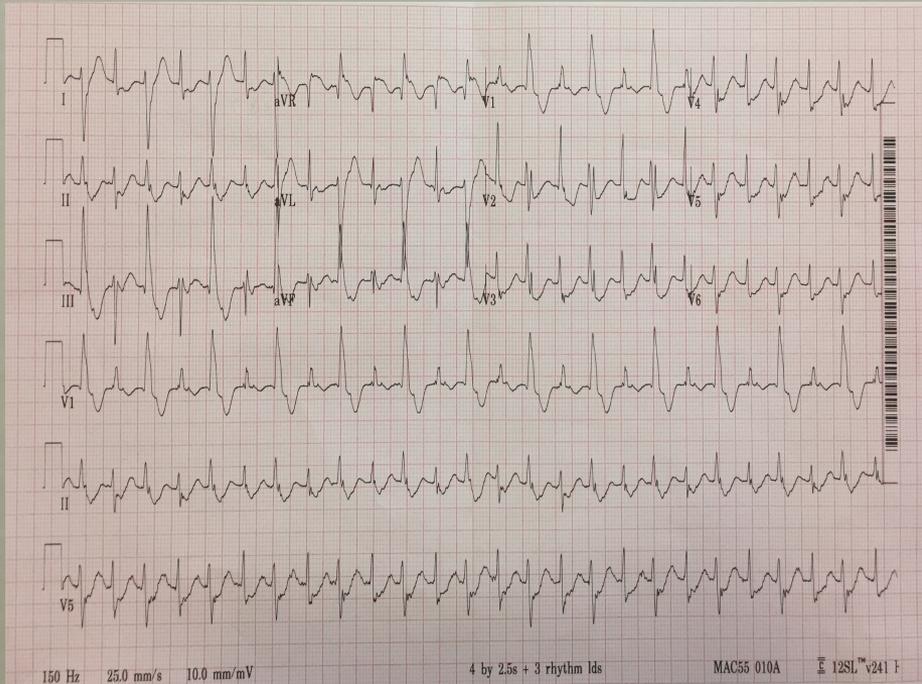


5-1 415-713-8629
3-1/2
 1 2 3 4 5 6 7 8 9 10 11 12
 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70
 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
 91 92 93 94 95 96 97 98 99 100

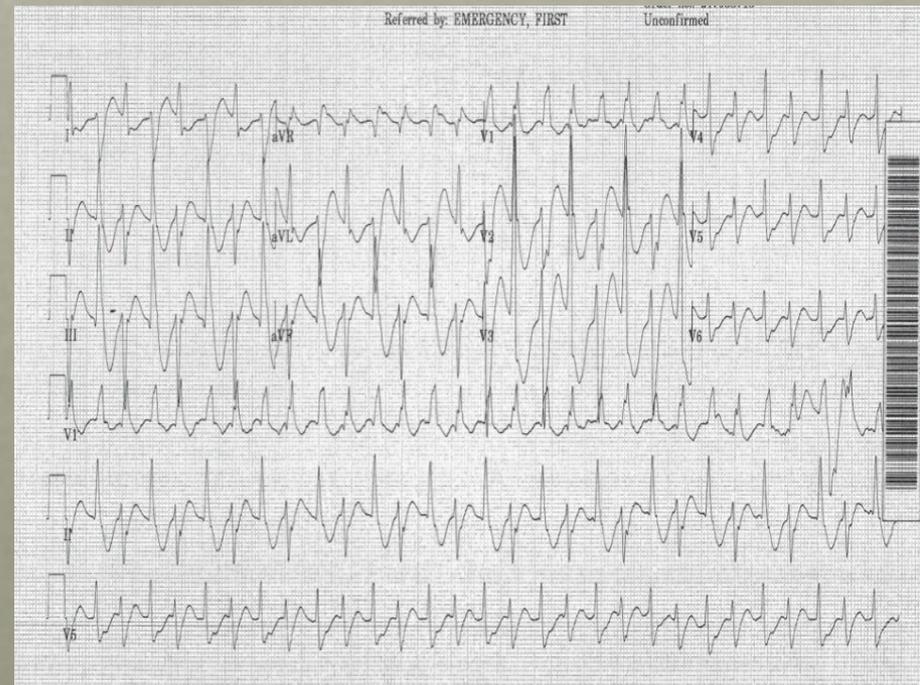


EKGs

Patient #1



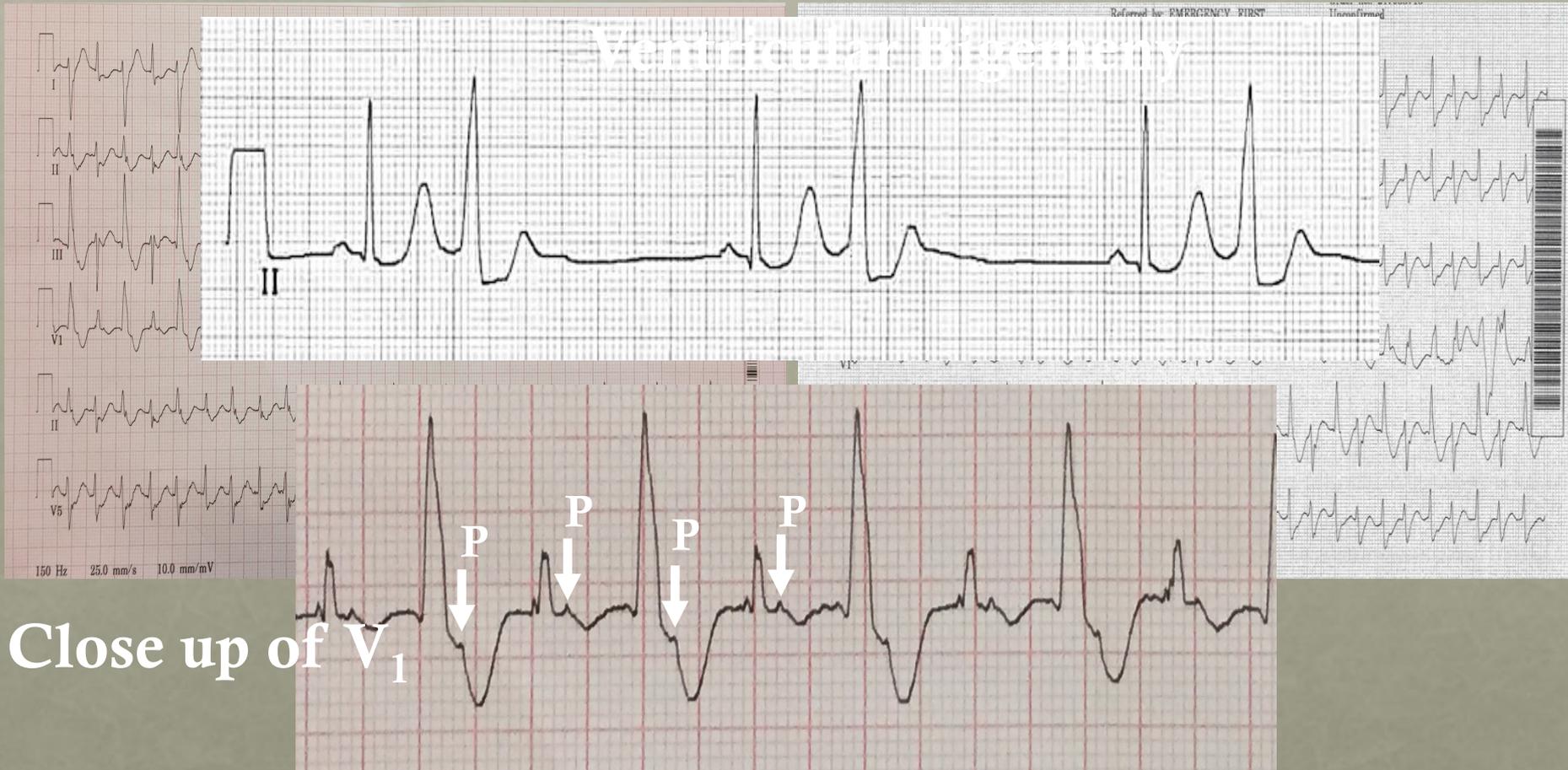
Patient #2



SELECTED ECG'S FOR BOTH PATIENTS

Patient #1

Patient #2



Close up of V₁

CASE(S) # 4 CONTINUED

- Patient #1
 - Developed rapidly evolving tachydysrhythmias
 - Treated with adenosine, diltiazem, cardioversion, amiodarone, and lidocaine
 - ECMO
 - Died after one month of hospitalization
 - **Serum Aconitine = 5.4 ng/mL (4 hours)**
- Patient #2
 - Developed rapidly evolving tachycysrhythmias
 - Treated with calcium, sodium bicarbonate, mag, cardioversion and amiodarone.
 - Discharged on HD 2 in good condition
 - **Serum Aconitine = 1.8 ng/mL (3.5 hours)**

ACONITE



- Also known as Monkshood, Wolfsbane, Devil's helmet)
- Used in traditional Chinese medicine
- Voltage sensitive sodium channel opener
 - Increased intracellular sodium and calcium
- Arrhythmia's secondary to delayed after-depolarizations and early after depolarizations.
- Similar to cardiac glycosides but without hyperkalemia (Na/K ATPase unaffected)

SYNTHETIC MARIJUANA

- Not marijuana!
 - Not regulated
 - Highly variable



SUMMARY

- Drugs of abuse can have cardiac implications
- We still don't know all that synthetic marijuana does
 - Contaminants
- Be ready to match the creativity of our patients!