

# Clinical Problem Solving

TBA (aka the poor soul), MD

Discussant

Gustavo Heudebert, MD

Presenter

*Today's speaker has no conflict of interest to disclose.*

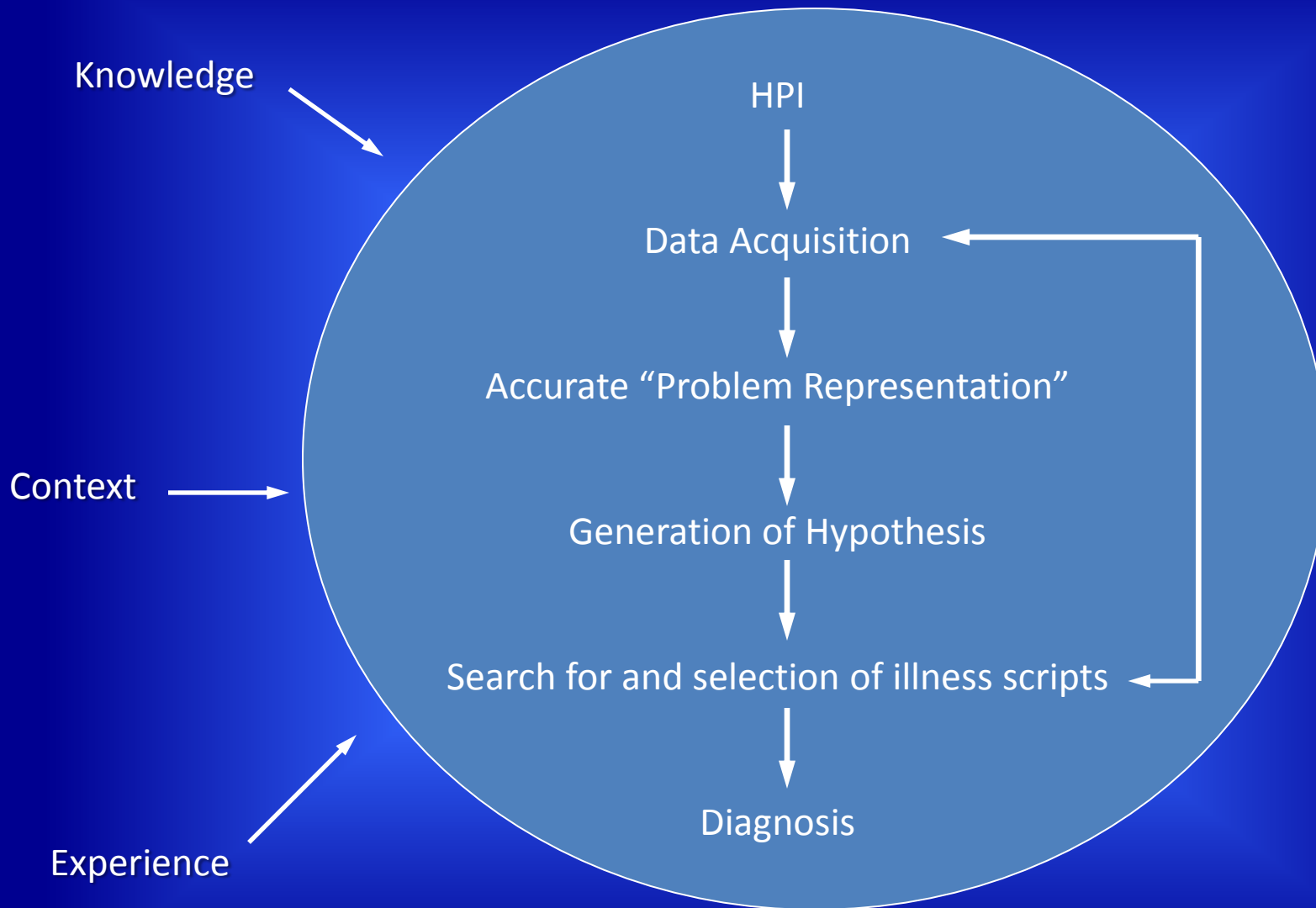
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# Process

- ❖ Cases are chosen from patients seen on the wards or ambulatory morning report
- ❖ Diversity of topics
- ❖ Focus of conference is clinical reasoning

“He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all.”



*Bowen, JL. N Eng J Med 2006;355:2217-25.*

# Dual Process Theory

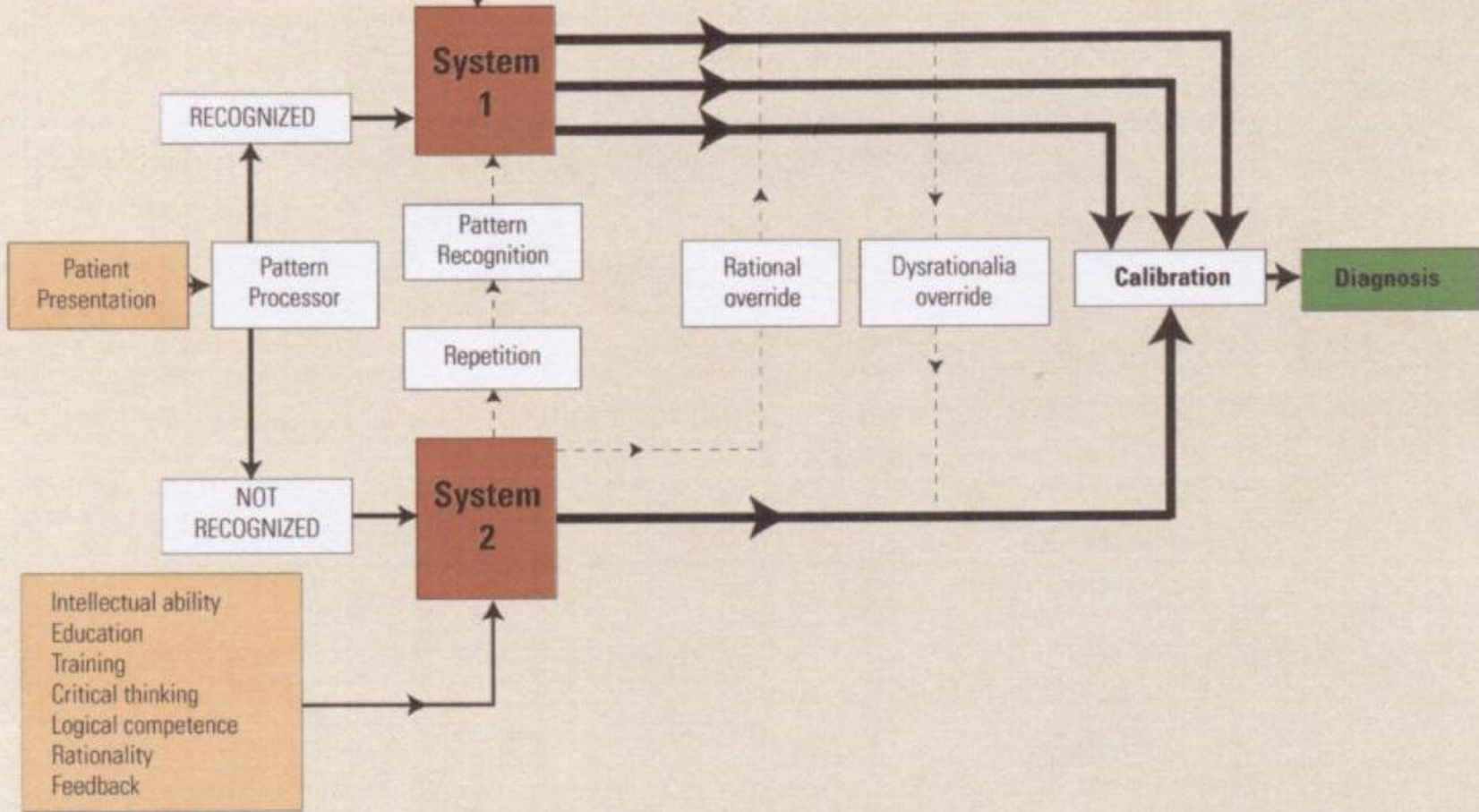
## ❖ System One

- Intuitive approach
- Highly context bound
- Pattern recognition

## ❖ System Two

- Lack of recognition of signs / symptoms
  - ✓ Lack of illness script match
- Low pathognomicity / high uncertainty

**Context**  
Ambient conditions  
Task difficulty  
Task ambiguity  
Affective state  
**Modular responsivity**



Intellectual ability  
Education  
Training  
Critical thinking  
Logical competence  
Rationality  
Feedback

RECOGNIZED

Patient Presentation

Pattern Processor

System 1

Pattern Recognition

Repetition

System 2

NOT RECOGNIZED

Rational override

Dysrationalia override

Calibration

Diagnosis

# Case # 1

- ❖ A 58 AAM with abdominal pain
  - Two days duration
  - Diffuse / crampy
  - Nausea and vomiting
  - Profuse watery diarrhea without blood /pus
  - Fever and chills
  - No clear aggravating or alleviating factors
  - Doing well otherwise until two days ago

# Case # 1

❖ FHx / SHx / ROS: non contributory

❖ Past medical history

➤ Hypertension

➤ Hyperlipidemia

➤ Colorectal cancer

✓ S/P resection 6 months; receiving adjuvant chemotherapy

✓ Last cycle capecitabine / 5-FU completed 6 days ago

# Physical Examination

❖ T: 102.9 F; HR: 125x'; RR: 22x'; BP: 100/60

WD, thin, acutely ill, diaphoretic, alert, ox3.

Lungs: CTA posteriorly; CV: regular tachycardia

Abdomen: diffusely distended and tender with guarding. Mild rebound at RLQ. Decreased bowel sounds.

Rectal: liquid stools; Hemoccult positive

Neurologic: non focal.

No C/C/E

# Laboratory Data

CBC: WBC: **1.8** ( $15^S$ ,  $10^B$ ,  $55^L$ ,  $15^M$ ); Hgb: 9.5 gm/dl;  
Platelets: 110K. **ANC: 450**

PT/PTT: normal

BMP: Creatinine: 1.9 mg/dl; potassium: 2.9 meq/L;  
bicarbonate: 18 meq/L. Normal AG

LFTs: normal

Acute abdominal series: no free air. No air fluid  
levels but diffuse dilatation of small bowel loops

CxR: normal

# Additional Imaging

- ❖ CT abdomen without contrast
  - Cecal wall thickening and pericolic stranding in the cecum ascending colon c/w typhlitis

# Typhlitis

- ❖ Neutropenic or necrotizing enterocolitis
- ❖ Pathogenesis
  - Mucosal injury
  - Profound neutropenia
  - Tissue invasion by microorganisms
    - ✓ Necrosis
- ❖ Bowel wall thickening, discrete or confluent ulcers, intramural edema

# Typhlitis

- ❖ Seen most commonly amongst patient with hematological malignancies
  - Mucositis (OR 31)
  - Stem Cell transplantation (OR 69)
  - Chemotherapy within two weeks (OR 13)
- ❖ Severe inflammation of the colon
  - Predominance of cecum

# Typhilitis

- ❖ Suspect in neutropenic patients with abdominal pain and fever
  - Specially if RLQ pain
- ❖ Symptoms present 10 to 14 days after chemotherapy
- ❖ Abdominal distension, nausea, vomiting, diarrhea, fever.

# Thyphlitis

❖ High mortality (20% to 30%)

➤ Perforation

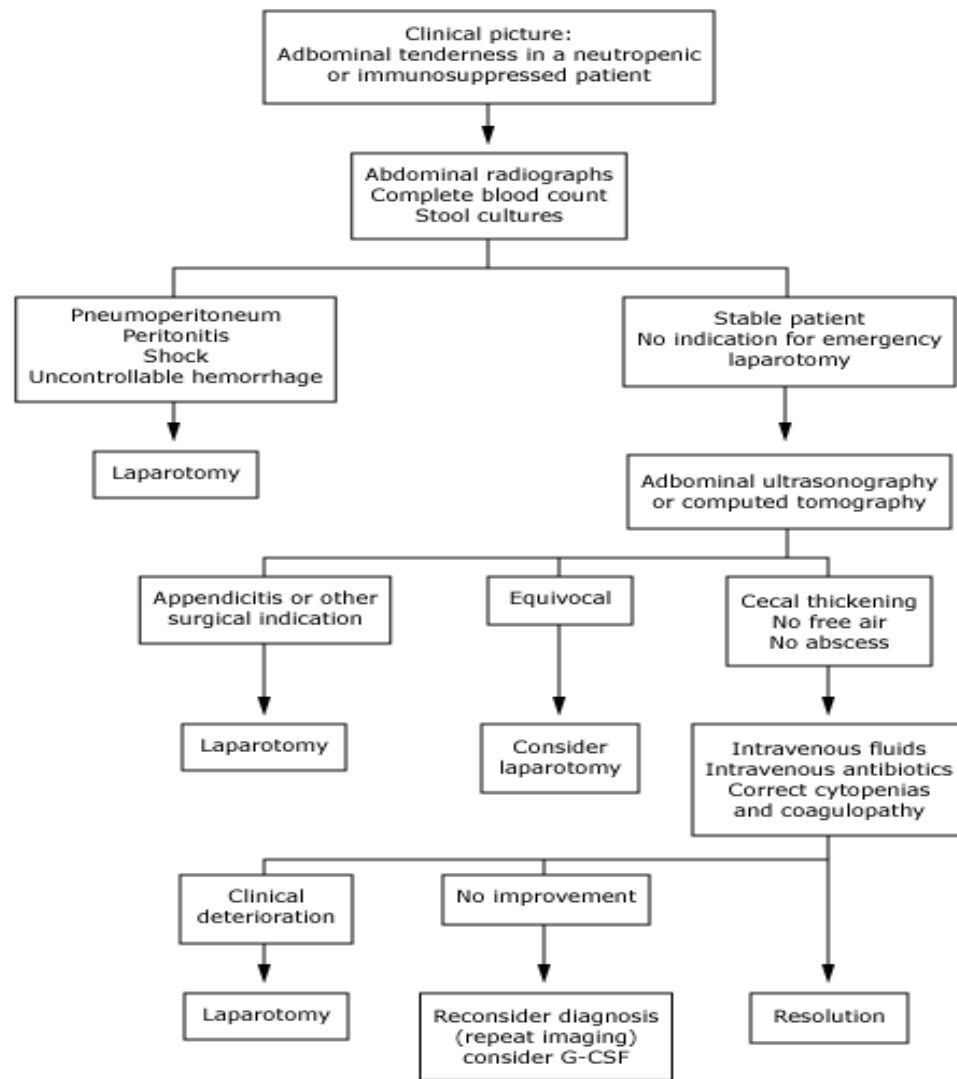
❖ Management

➤ Avoid procedures

➤ IV fluids

➤ Systemic antibiotics

➤ Growth factors (?)



# Case # 2

## ❖ 62 yo AAF with weakness

- Noted by daughter two days PTA when patient getting out of the car
  - ✓ Difficulty raising left leg enough to get out of the car
- Just then noticed by the patient
- No HA / chest pain
- No numbness / tingling

# Case # 2

## ❖ PMH

- Hypertension for several years
- S/P CVA several years ago: left sided LLE weakness
- Hyperlipidemia

❖ Medications: ACE-I, HCTZ, ASA, statin

❖ FH / SH: non contributory

❖ ROS: dysuria

## Case # 2

AF; 165/100; 93x'; 16x'; 97% (RA)

WD, WN, cooperative, alert, oriented x 3

Lungs: CTA bilaterally. CV: RRR, normal S<sub>1</sub>/S<sub>2</sub>

Abdomen: soft/NT/ND. Good BS. No HSM

No C/C/E. Skin: no rash

Neurological exam: CN II to XII normal.

Strength: 5/5 LUE/LLE. 4/5 LUE; 2/5 LLE

Upgoing toe on the left; 3+ DTR R patella; o/w

2+

# Laboratory Data

CBC: 16.8 (78<sup>S</sup>, 7<sup>bands</sup>, 10<sup>L</sup>, 5<sup>M</sup>). H/H: 12/36%.

Platelets: 350K

BMP/LFTs: normal

CxR: mild cardiomegaly but no infiltrates

EKG: NSR and LVH.

CT head without contrast: prior left parieto-occipital stroke (unchanged)

U/A: 25-30 WBCs; 5-10 RBCs. LE/nitrite positive

# Second night on service

- ❖ Temperature up to 102.8°F
- ❖ Blood cultures are drawn
  - Started on pip/tazo
- ❖ Urine culture
  - Greater than 100,000 CFU of E. Coli
  - Blood cultures: positive for E. Coli

# Three days later

❖ Patient afebrile

❖ Dysuria resolved

❖ Neurological deficit resolved

# Anamnestic Phenomena

- ❖ Recurrence of neurological symptoms from a “trigger” event
  - Infection
  - Remote ischemia (i.e. AMI)
  - Hypotension
- ❖ Mechanism unknown
  - Animal models suggestion of immune mediated response

# Anamnestic stroke

- ❖ Symptoms resolve at trigger event improves
- ❖ Resolution back to prior baseline

# Case # 3

- ❖ 35 yo white female comes with recurrent episodes of “passing out”
  - Going on for 3 months; witnessed on many occasions
    - ✓ Abrupt
    - ✓ No premonitory symptoms (i.e. CP, palpitations)
    - ✓ LOC last 30 to 45 seconds
    - ✓ No b/b incontinence; no post ictal symptoms

# PMH / SH / FH / ROS

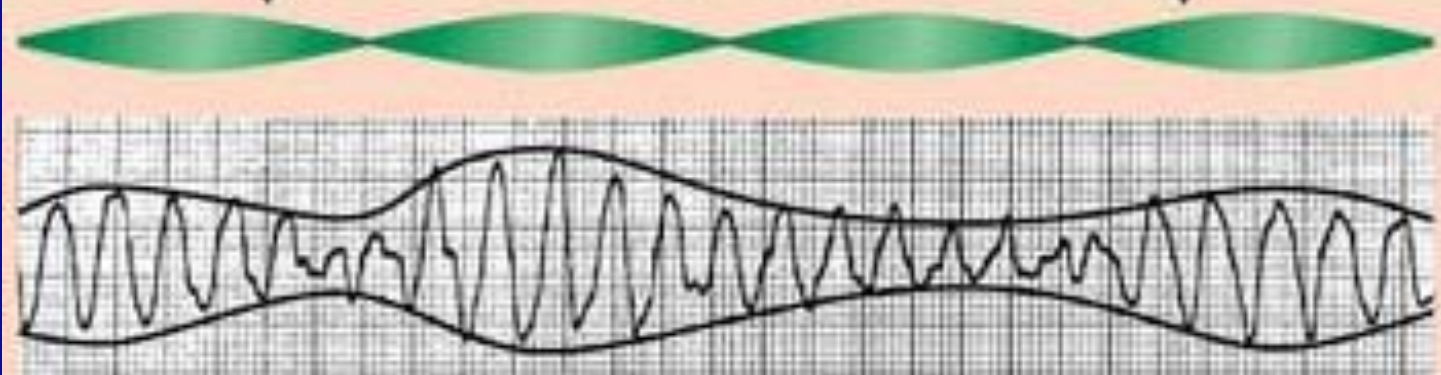
- ❖ PMH: none
- ❖ Medications: prn loratidine
- ❖ FH: non contributory
- ❖ ROS: LOC not related to coughing / sneezing/defecation/micturition/change in position of the head. No weight loss / SOB / CP

# Interval Development

- ❖ You are hearing information from intern when a code is called from the EM
  - Bay where patient is located
  - EKC tracing seen at the monitor



outline looks like a party streamer



# Physical Examination

HR: 52x'; RR: 16x'; AF; BP: 110/55

WD, WN, AND, alert, ox4. Deep voice.

CV: regular bradycardia. No murmur or gallops

Lungs: CTAP bilaterally

Abdomen: no HSM. No C/C/E

Neurologic: delayed relaxation phase of reflexes

# Laboratory Data

- ❖ CBC: normal
- ❖ BMP / LFTs: normal
- ❖ CxR: normal
- ❖ EKG: sinus bradycardia. Diffuse low voltage.  
Prolonged QY of over 700 msec
- ❖ TSH: > 100
- ❖ Free T4: 0.2

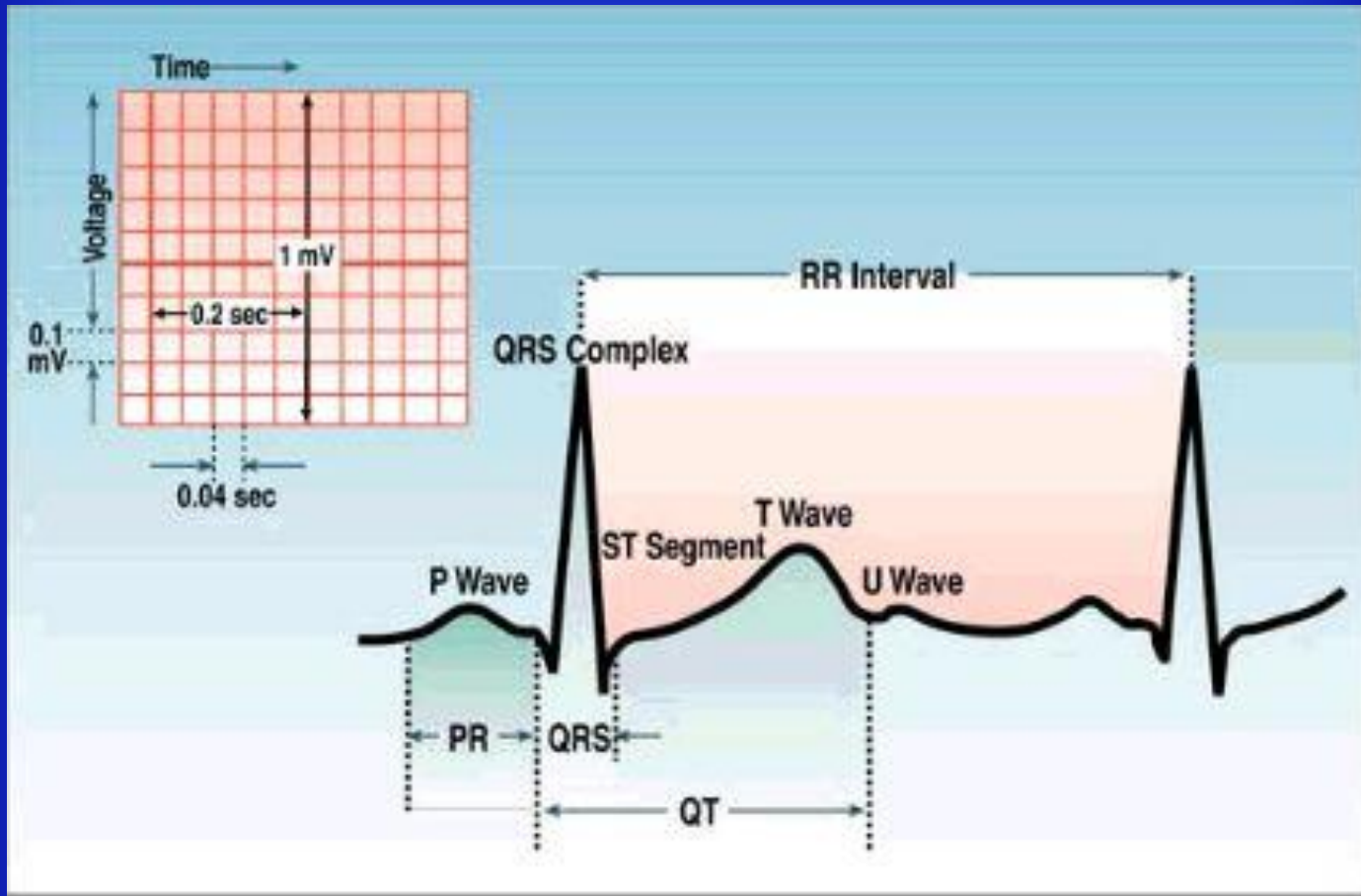
# Diagnosis

- ❖ Torsades des Points from primary hypothyroidism
- ❖ Mechanism
  - R on T phenomenon from severe bradycardia (akin to methadone)

# Torsades des Pointes

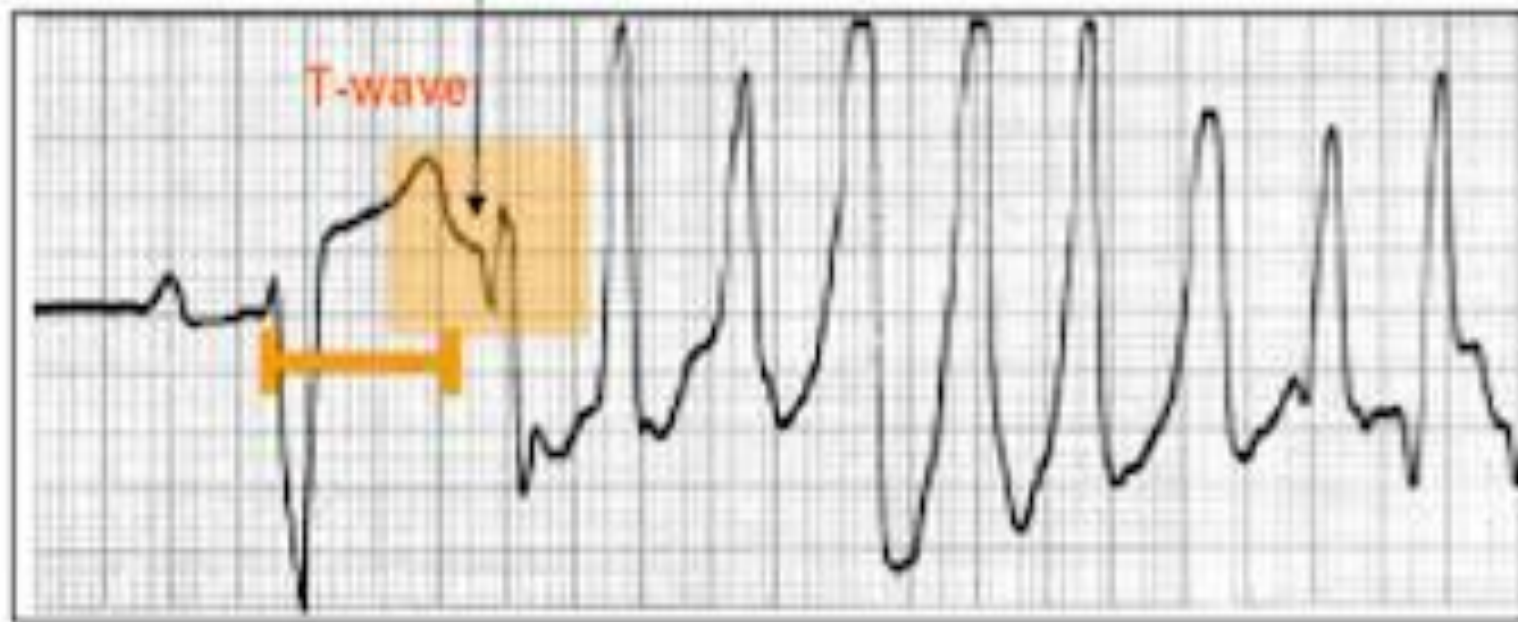
- ❖ Polymorphic VT with heart rate greater than 100 bpm and frequent changes of the axis
  - Prolonged QT
- ❖ Characteristics
  - Heart rate between 165 and 22 bpm
  - Variable RR interval
- ❖ Short lived and resolves spontaneously

Congenital	Acquired (continued)
Jervell and Lange-Nielsen syndrome (including "channelopathies")	<b>Antihistamines</b>
Romano-Ward syndrome	Terfenadine
Idiopathic	Astemizole
<b>Acquired</b>	<b>Psychotropic drugs</b>
<b>Metabolic disorders</b>	Thioridazine
Hypokalemia	Phenothiazines
Hypomagnesemia	Tricyclic or tetracyclic antidepressants
Hypocalcemia	Haloperidol and other butyrophenones
Starvation	<b>Antineoplastic agents</b>
Anorexia nervosa	Dasatinib, eribulin, nilotinib, romidepsin, sorafenib, sunitinib, vandetanib, vorinostat
Liquid protein diets	<b>Other drugs</b>
Hypothyroidism	Selective serotonin reuptake inhibitors
<b>Bradyarrhythmias</b>	Risperidone
Sinus node dysfunction	Methadone
AV block - second or third degree	Vasodilators - prenylamine, bepridil, mibefradil
<b>Antiarrhythmic drugs</b>	Diuretics - via electrolyte changes (esp. hypokalemia or hypomagnesemia)
Quinidine	Serotonin antagonist - ketanserin
Procainamide or N-acetylprocainamide	Motility drugs - cisapride, domperidone
Disopyramide	Droperidol - may be safe at the low doses used by anesthesiologists (0.625 to 1.25 mg)
Amiodarone and dronedarone	Ranolazine
Sotalol	HIV protease inhibitors
Dofetilide, ibutilide, azimilide, sotalol	Miscellaneous - organophosphate insecticides, probuco, cocaine, terodiline, papaverine, certain Chinese herbs, chloral hydrate, arsenic trioxide, cesium chloride, levomethadyl
<b>Antimicrobial drugs</b>	<b>Other factors</b>
Erythromycin, clarithromycin, telithromycin, azithromycin (minor)	Myocardial ischemia or infarction, esp. with prominent T wave inversions
Pentamidine	Intracranial disease
Some azole antifungals - voriconazole, posaconazole	HIV infection
Some fluoroquinolones (eg, sparfloxacin, gatifloxacin, levofloxacin, moxifloxacin)	Hypothermia
	Connective tissue diseases with anti-Ro/SSA antibodies



Early  
R-wave

T-wave



## **Acquired LQTS**

### Pharmacologic

Magnesium sulfate

Isoproterenol

Lidocaine

Phenytoin

Sodium bicarbonate (for quinidine-related arrhythmia)

### Nonpharmacologic

Temporary pacing (atrial or ventricular)

## **Congenital LQTS**

### Pharmacologic

Beta blockers

Mexiletine

### Nonpharmacologic

Permanent dual chamber pacemaker

Left cardiac sympathetic denervation (cardiothoracic sympathectomy)

Implantable cardioverter-defibrillator

