

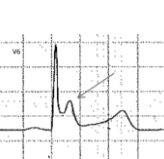
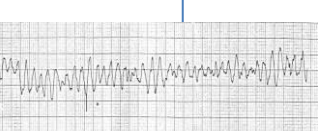


# Case Four

## Strange ECGs (Part 2)

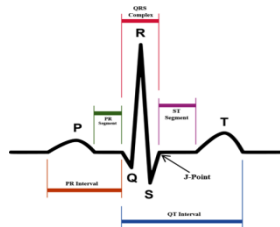
### Calcium

### ECG Changes in Hypercalcaemia

QRS Complex	Serum Ca Level (mmol/l)	ECG Change
 Normal	2.1-2.6	Normal
 HYPERcalcaemia	2.7-2.9	Shortened QT interval
	3.0-3.4	Osborn waves (J waves)
	>3.4	VF

90% > Ca due to Primary Hyperparathyroidism or Malignancy

### Normal Complex



### Symptoms >Ca



Thirst

Constipation

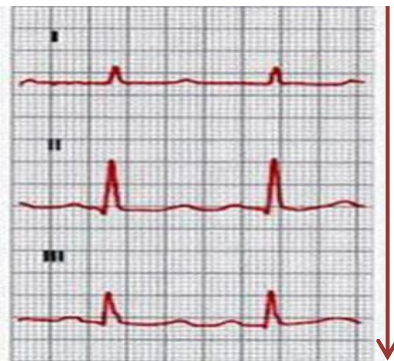


Confusion

**ED Treatment**  
 IV fluids 4-6L in 24hours  
 IV Bisphosphonates

### Hypocalcaemia

ECG Change
Lengthened QT
Shortened QRS
Sinus bradycardia
AV Block
VF



**Chvostek Sign**

Twitching when facial nerve tapped



**Trousseau's sign**

When BP cuff inflates creates carpopedal spasm

### Symptoms <Ca

CATS go numb:

Convulsions

Arrhythmias

Tetany

Spasms and stridor

Numbness in the fingers



**ED Treatment**  
 Critical  
 IV 10ml 10% Calcium Gluconate  
 Slow IV Over 3-4mins  
 Or  
 10ml 10% Ca Gluconate in 100ml NACL over 30 mins

*Caution*  
 Induces Flushing,  
 hypotension, bradycardia  
 and arrhythmias