ECG di...vino

Asti 24 Settembre 2016

Dr. Domenico Caponi

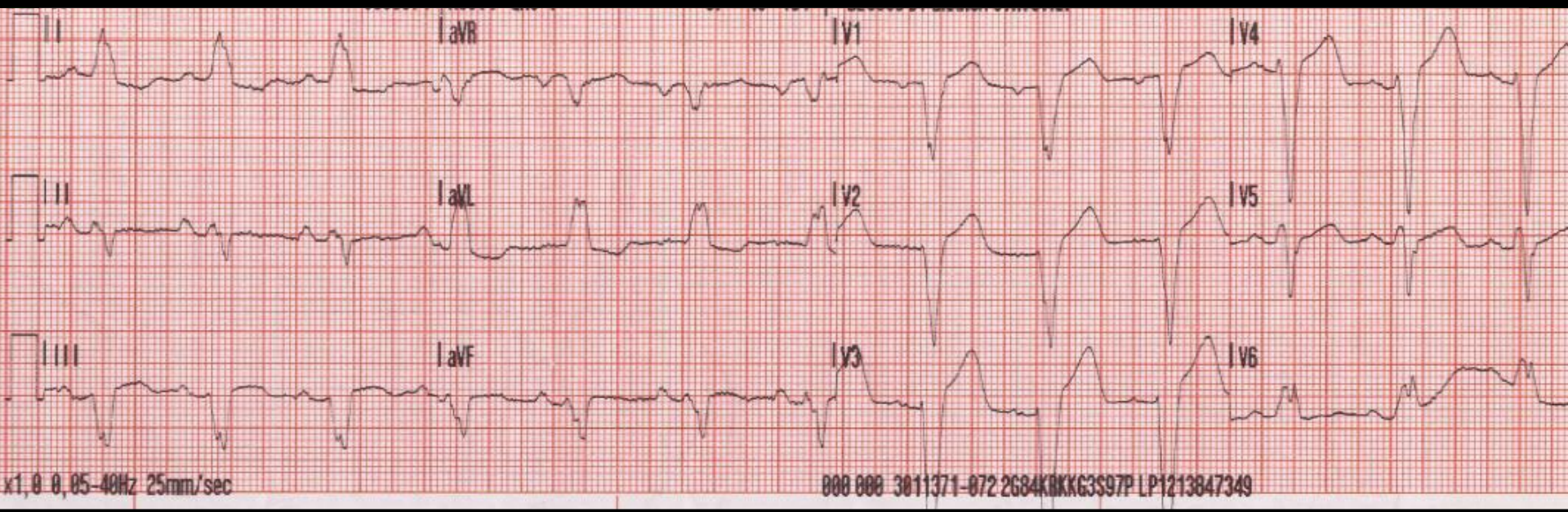
Ospedale Cardinal G. Massaia - Asti
SOC Cardiologia

ECG DIVINO Asti

Clinical history

Severe fatigue for months

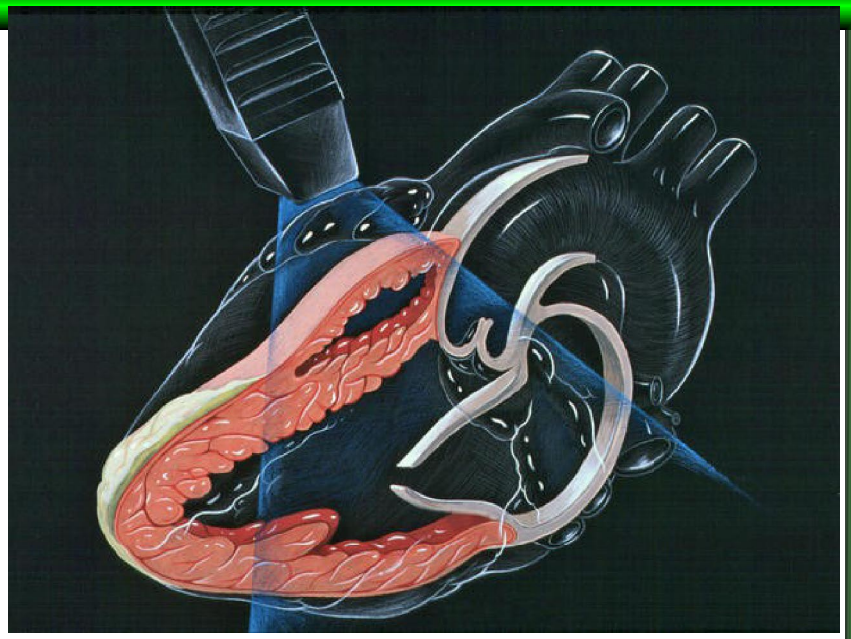
ECG



Clinical history

- 65 yr old woman
- Metabolic syndrome
- Hx of alcohol abuse
- Syncopal episode during orthostasis

Echocardiogram



Dilated hypertrophied left ventricle with antero-apical akynesia and posterior septum. EF assessed around 30%. Moderate mitral regurgitation and late activation of the lateral wall.

Diagnostic work-up

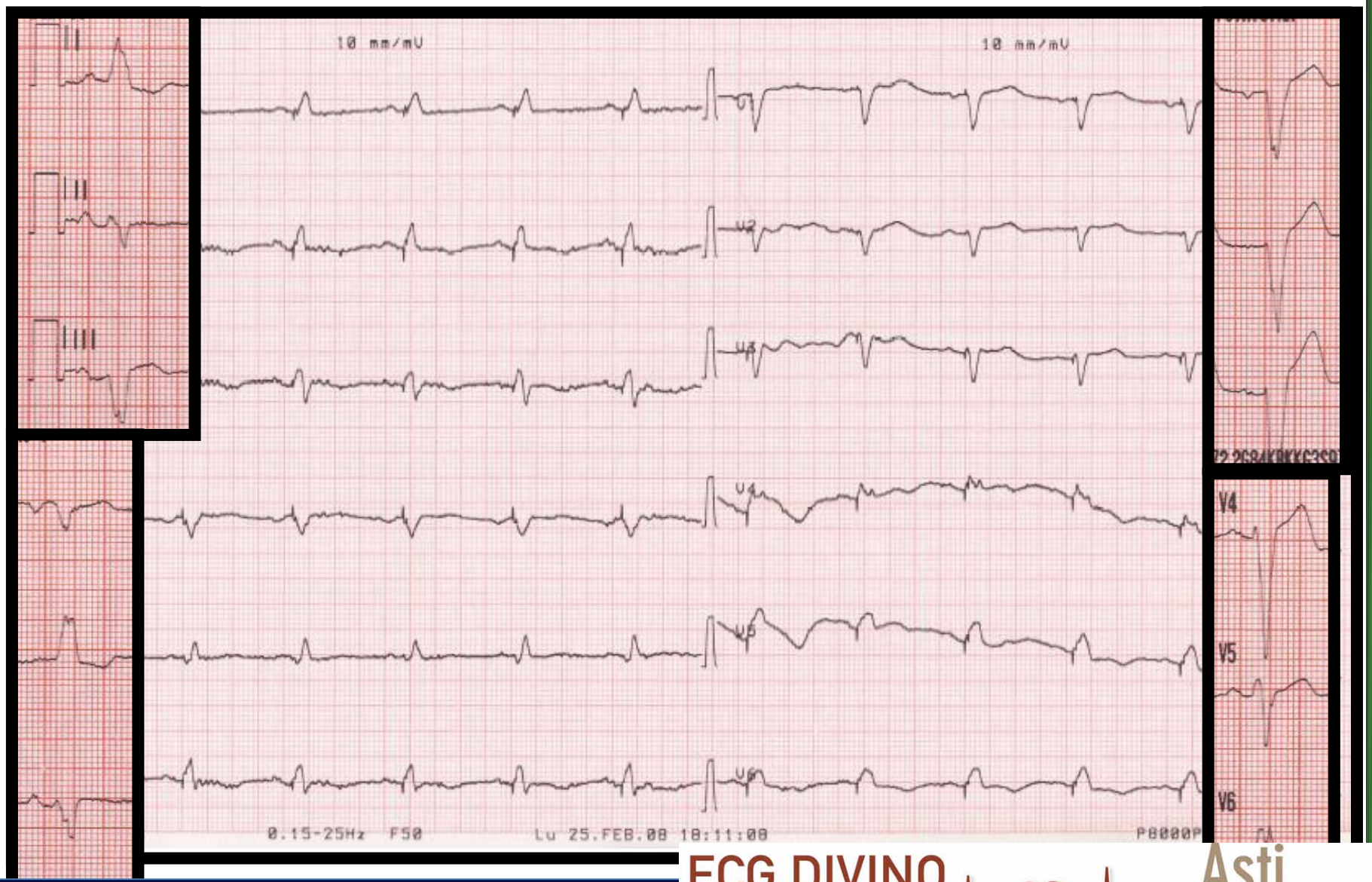
Holter ecg: sinus rhythm with constant LBBB. Occasional PVCs with rare couples of different morphologies

Coronary angiography: no significant lesions

….what to do?

1. **HUT**
2. **EP study**
3. **Reveal**
4. **Amiodarone**
5. **PM**
6. **ICD**

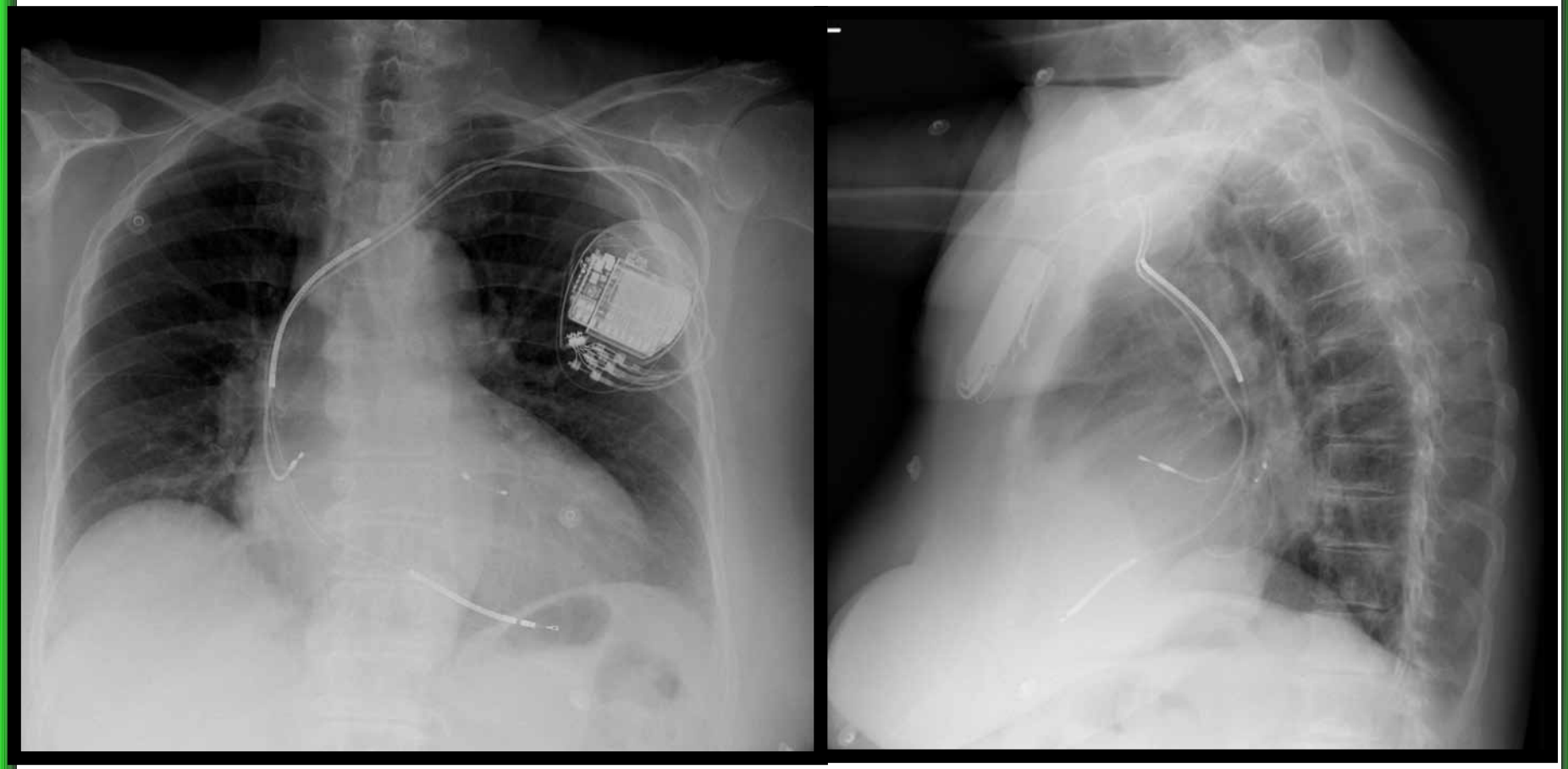
ECG post ICD-implant



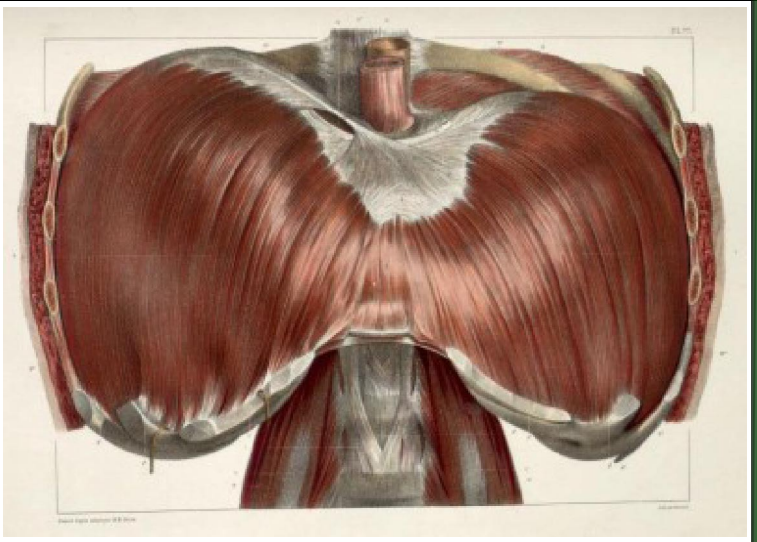
What is the pacing site ?

1. **Biventricular pacing**
2. **Bifocal pacing**
3. **Multisite pacing**
4. **RV septal pacing**

Biv ICD implanted

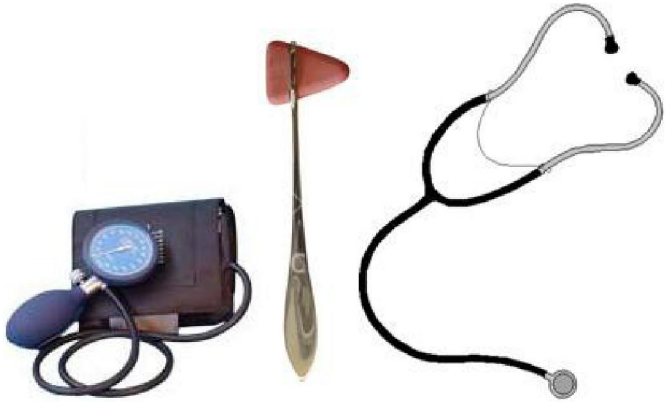


Two months later....



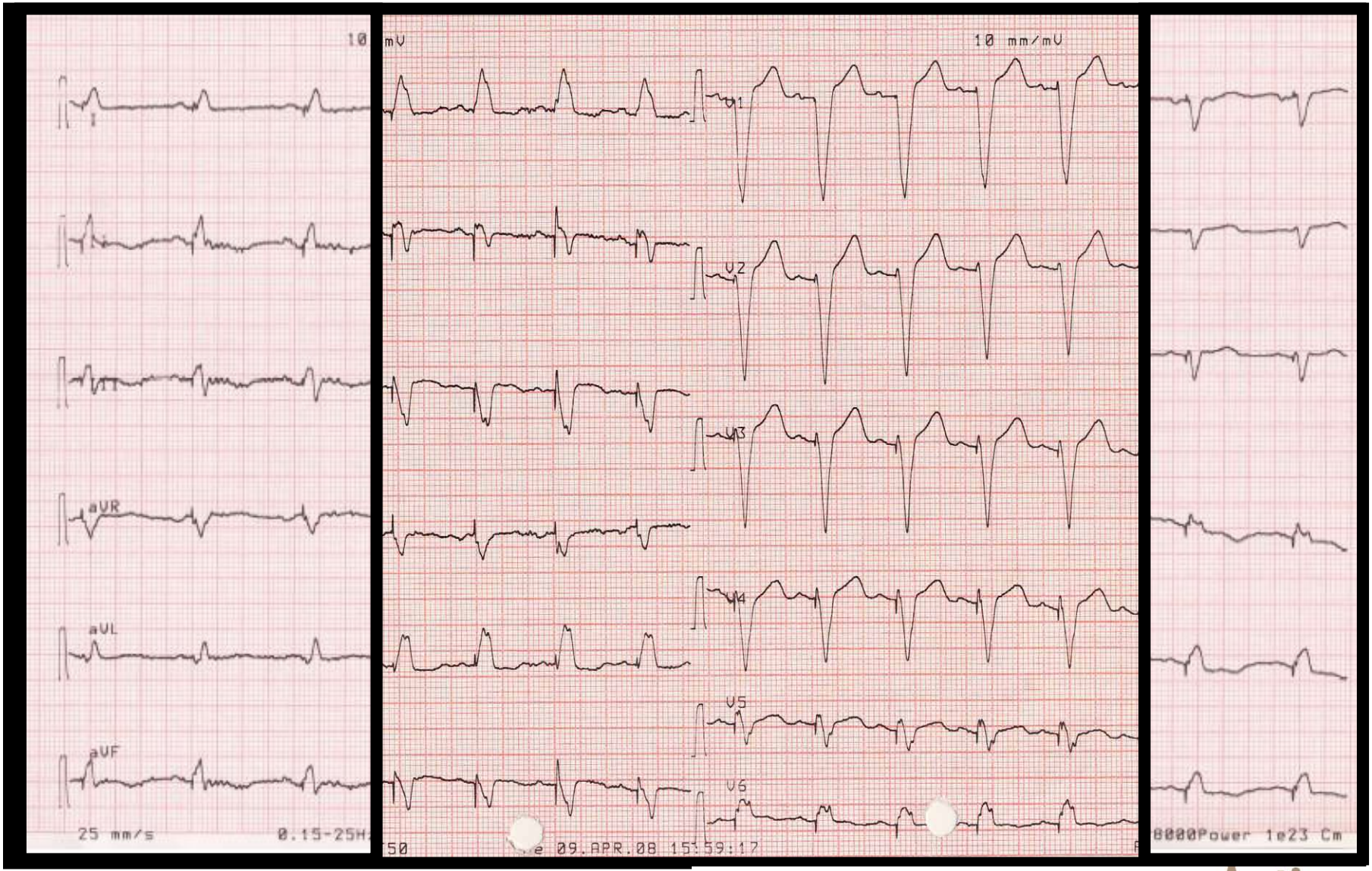
Admission in emergency room because of "*abdominal contractions*" for three days

Clinical exam



- **No signs of congestive heart failure**
- **Evidence of involuntary abdominal wall contractions variable in frequency and duration**

ECG



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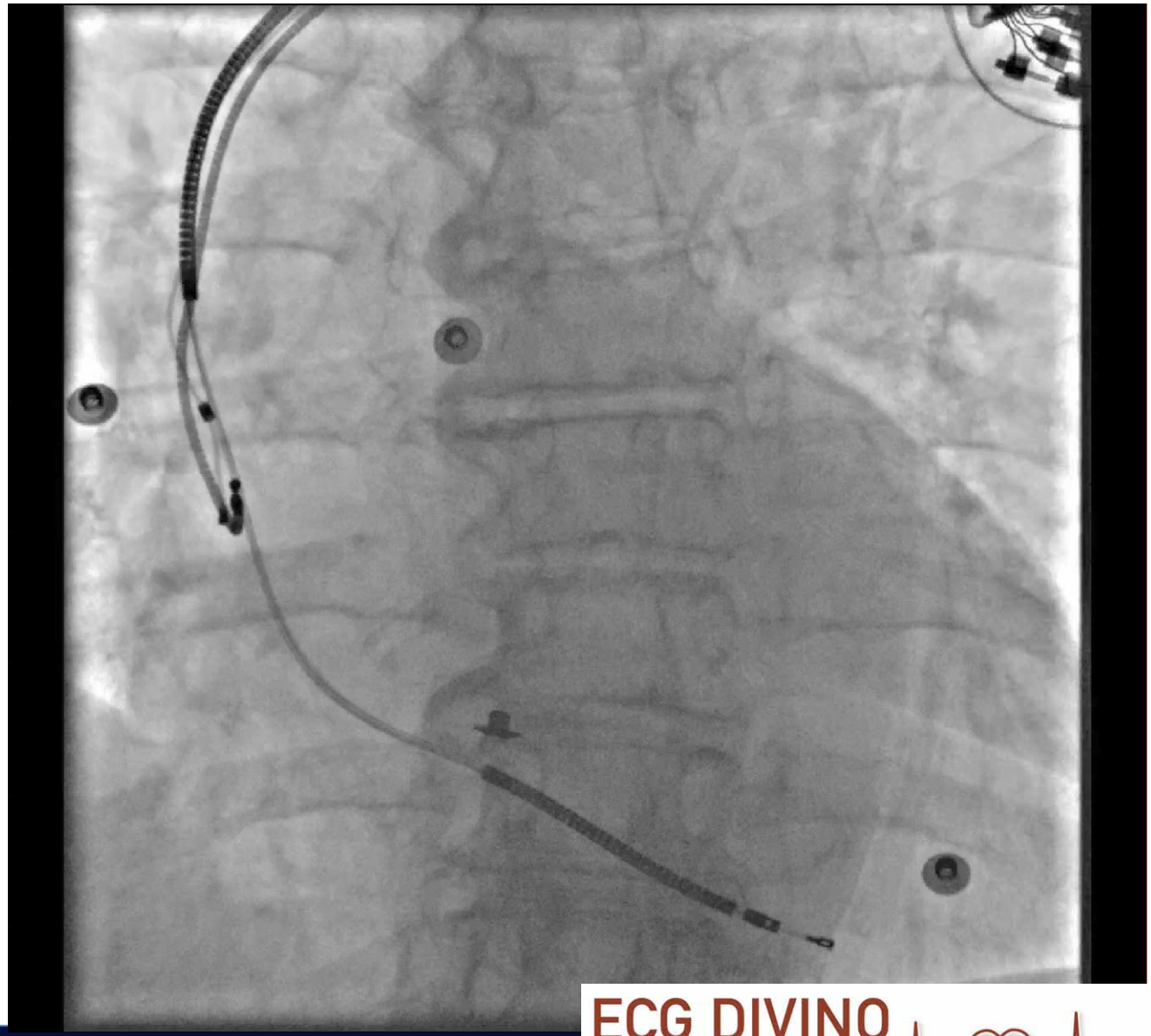
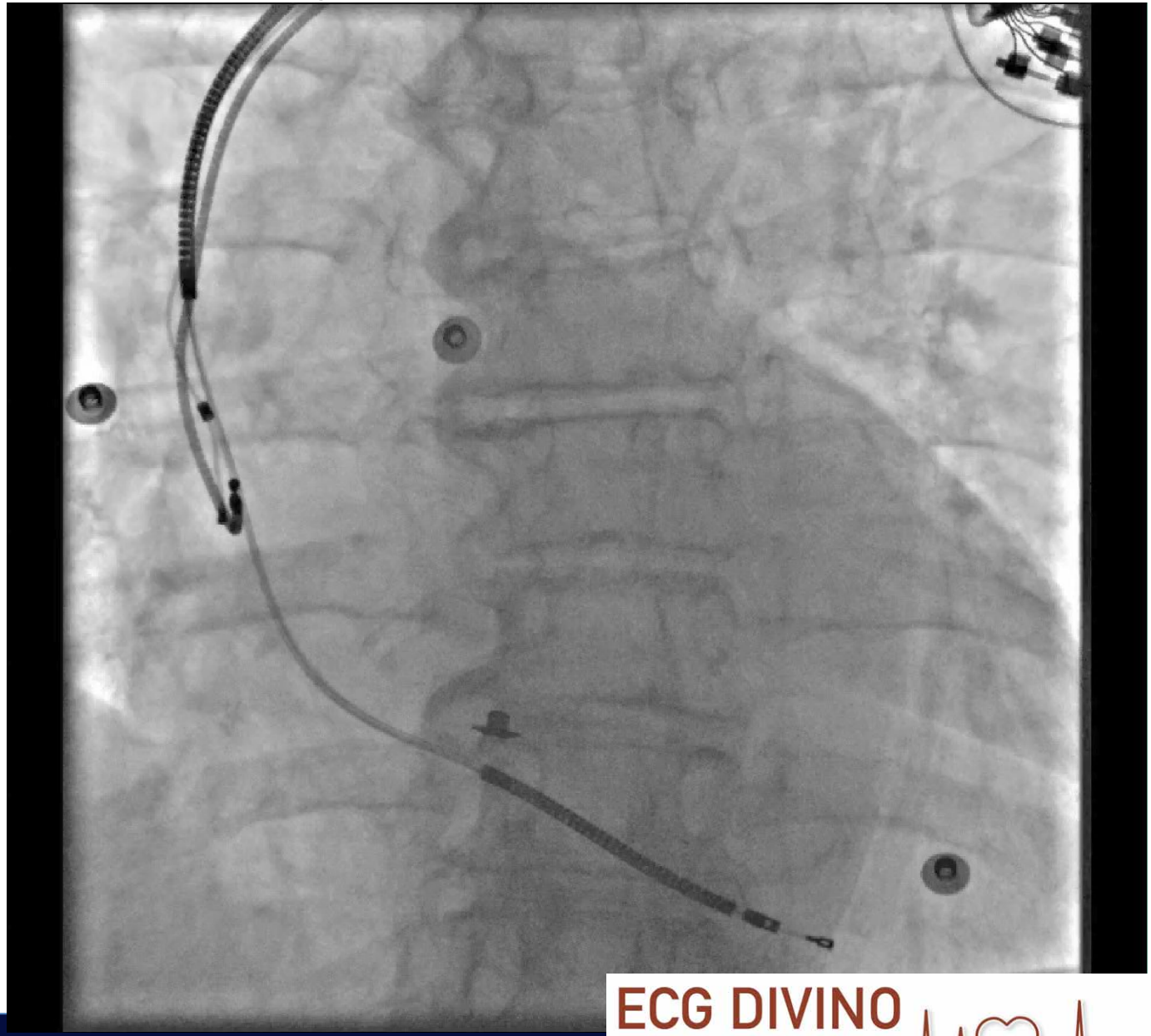
How to explain the symptoms ?

1. Increase of left ventricular amplitude threshold
2. CS catheter dislocation
3. Either 1 and 2
4. Worsening of intraventricular conduction

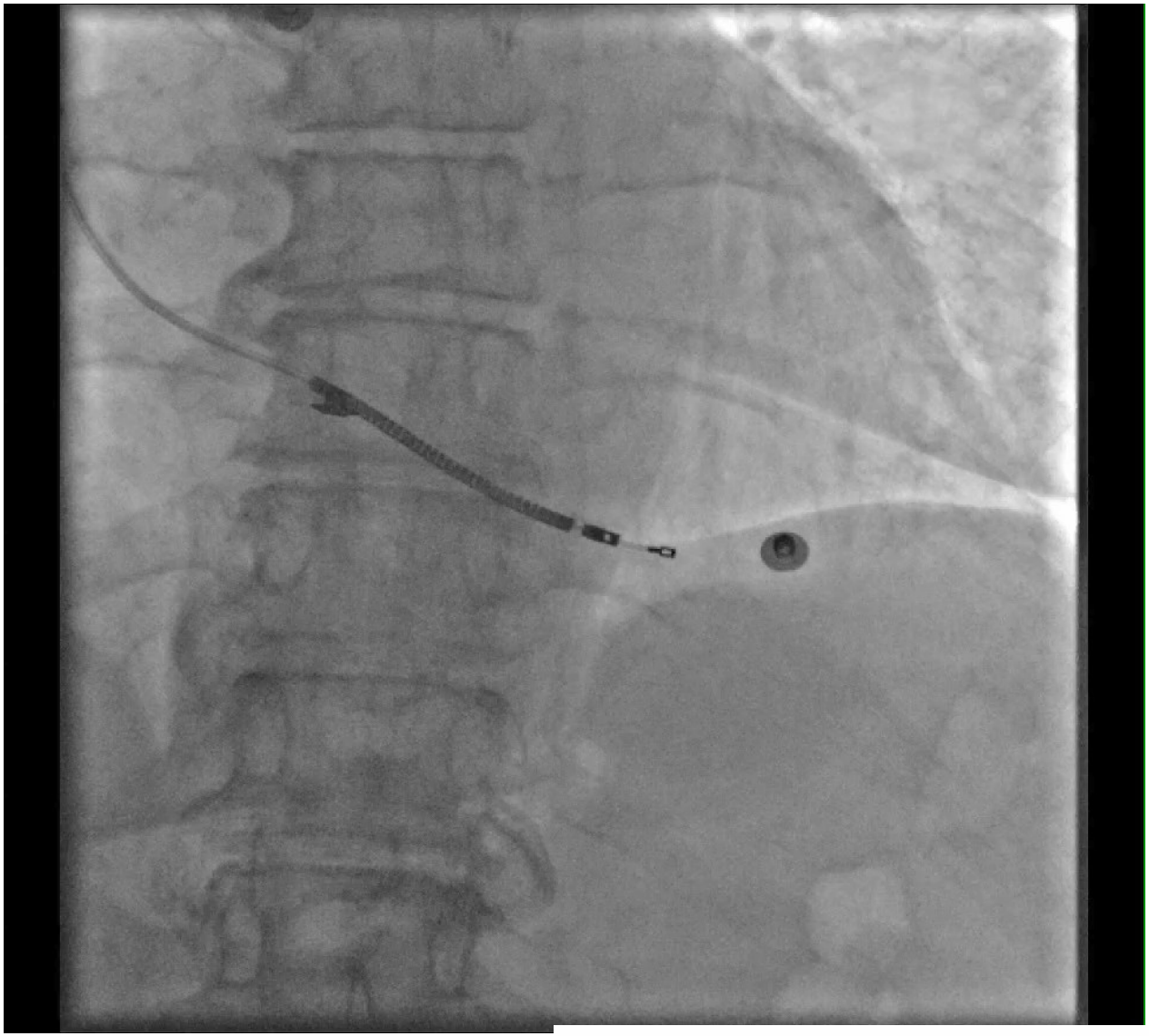
Chest Xray



Chest X-ray



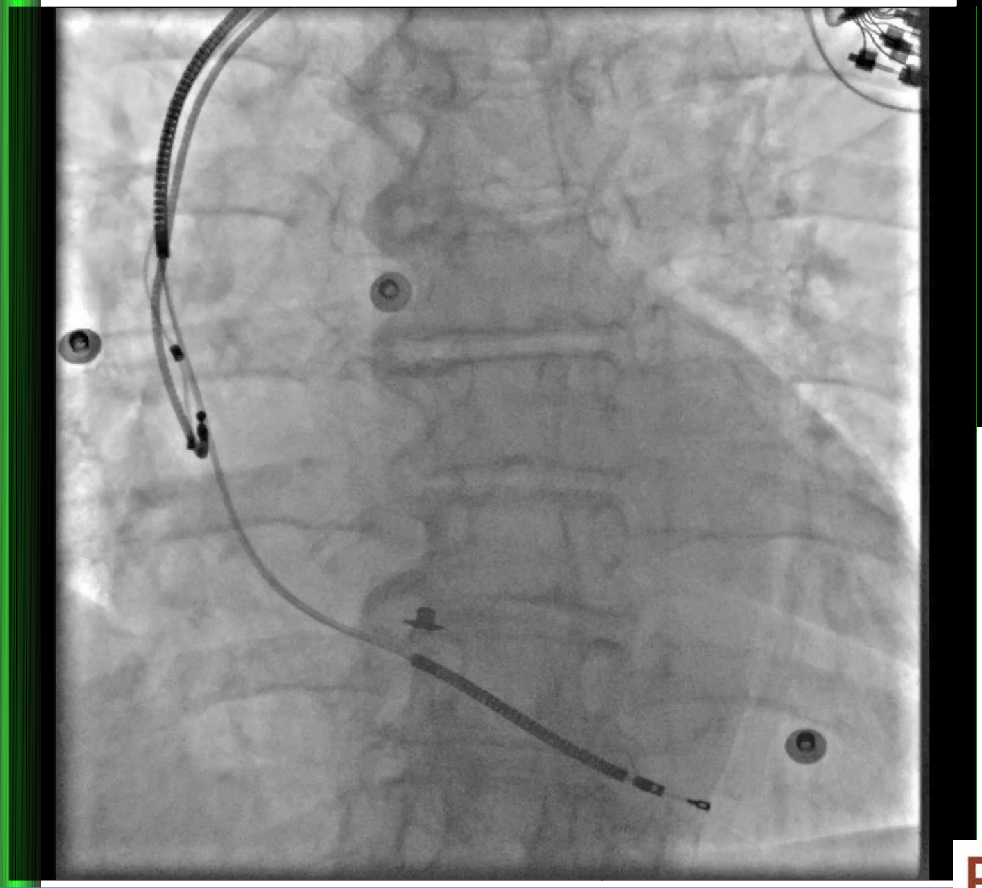
Chest X-Ray

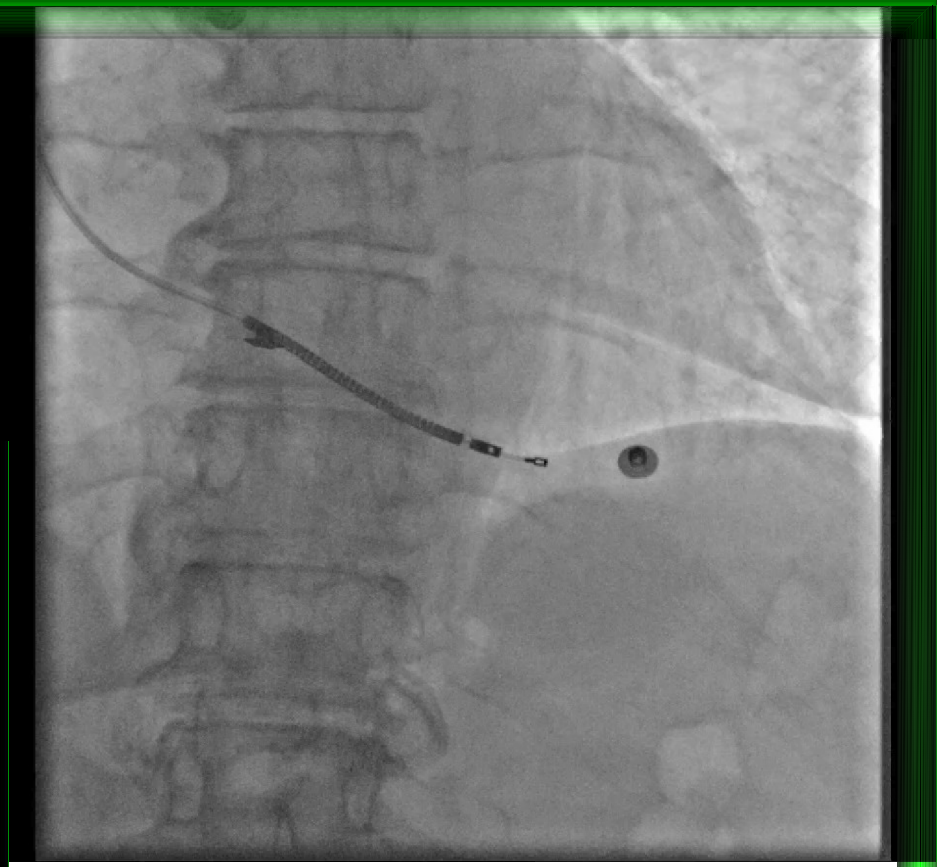


Are diaphragmatic contractions related to pacing ?

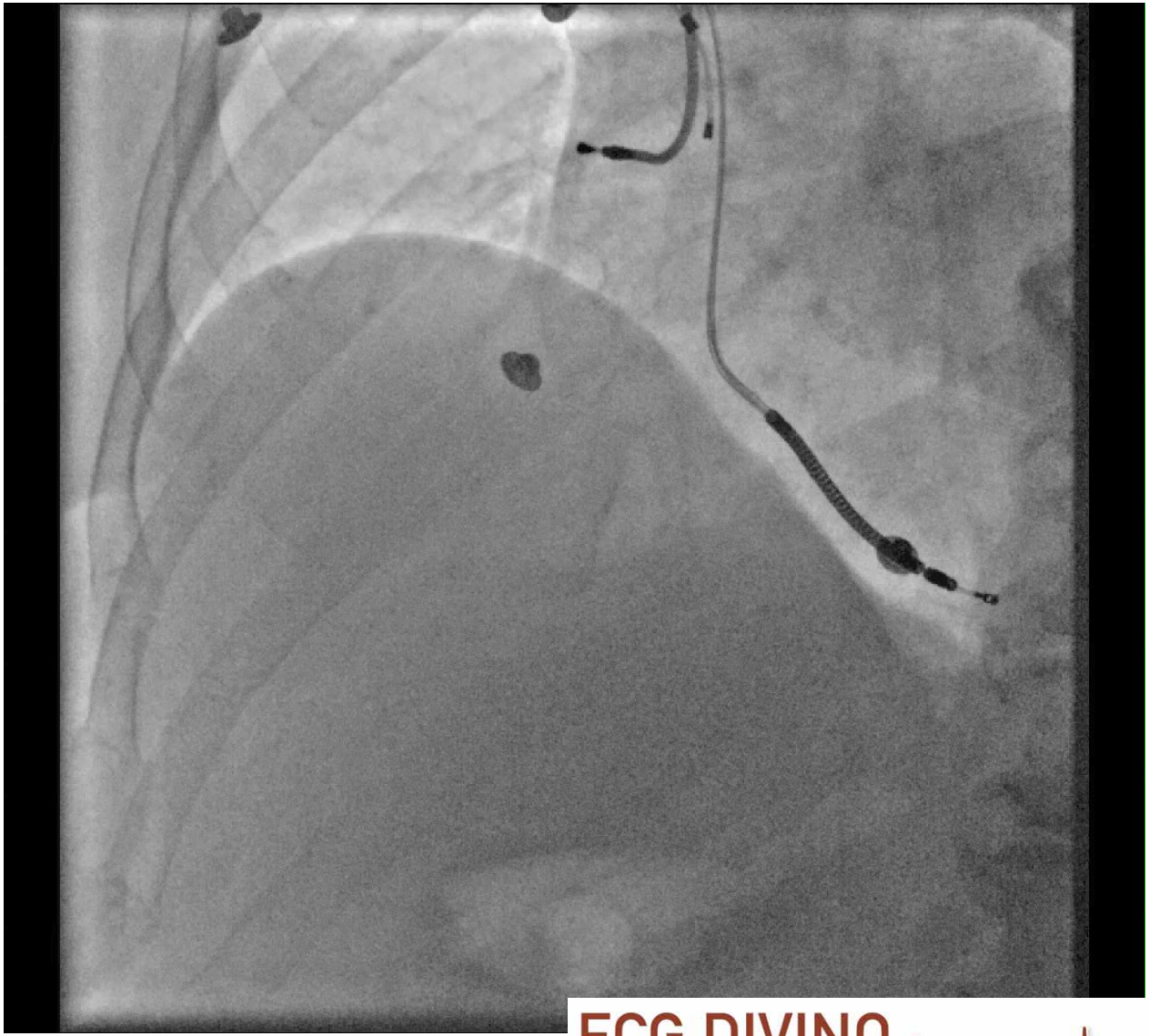
1. **Yes**
2. **No**

X-Ray





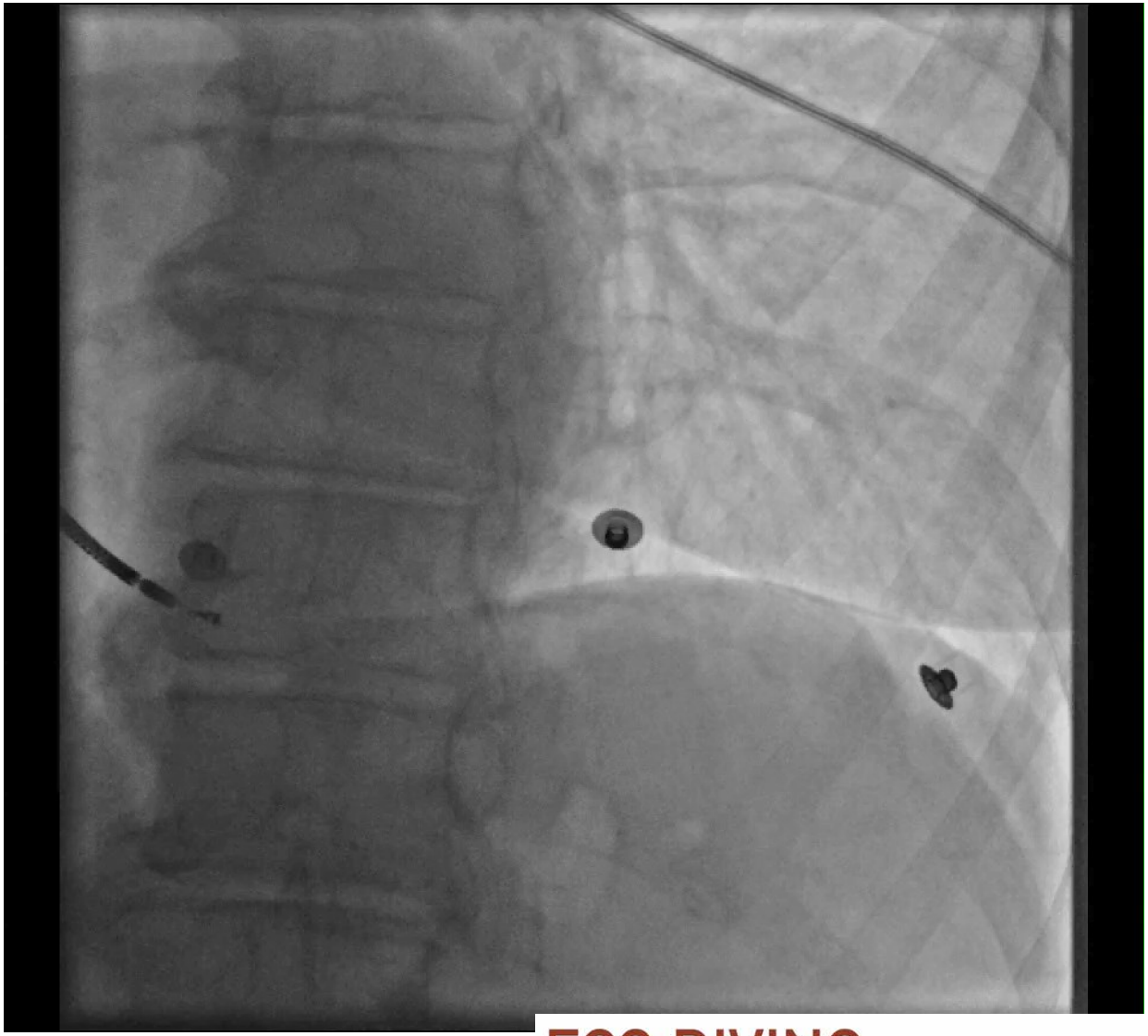
X-ray



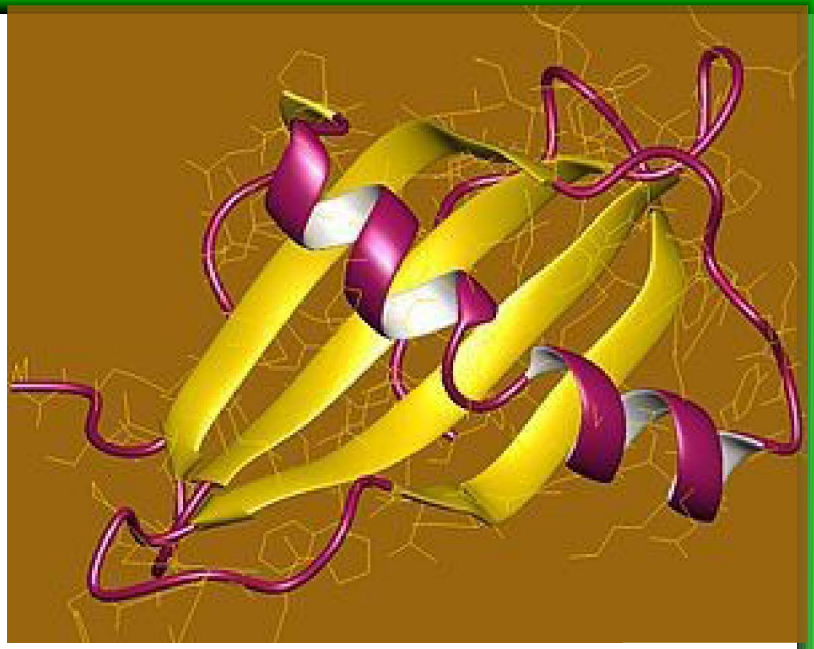
Are diaphragmatic contractions due to CS or atrial catheter capture ?

1. **Yes**
2. **No**

Chest X-ray

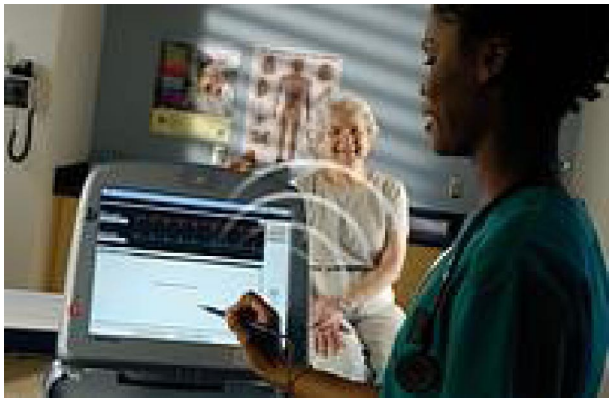


Diaphragmatic myoclonus:



More frequent during the day and "white coat effect"

ICD check



Electrical parameters ok and no diaphragmatic contractions with atrial, right ventricular and left ventricular stimulation

Is there an alternative diagnostic hypothesis ?

1) **Yes**

2) **No**

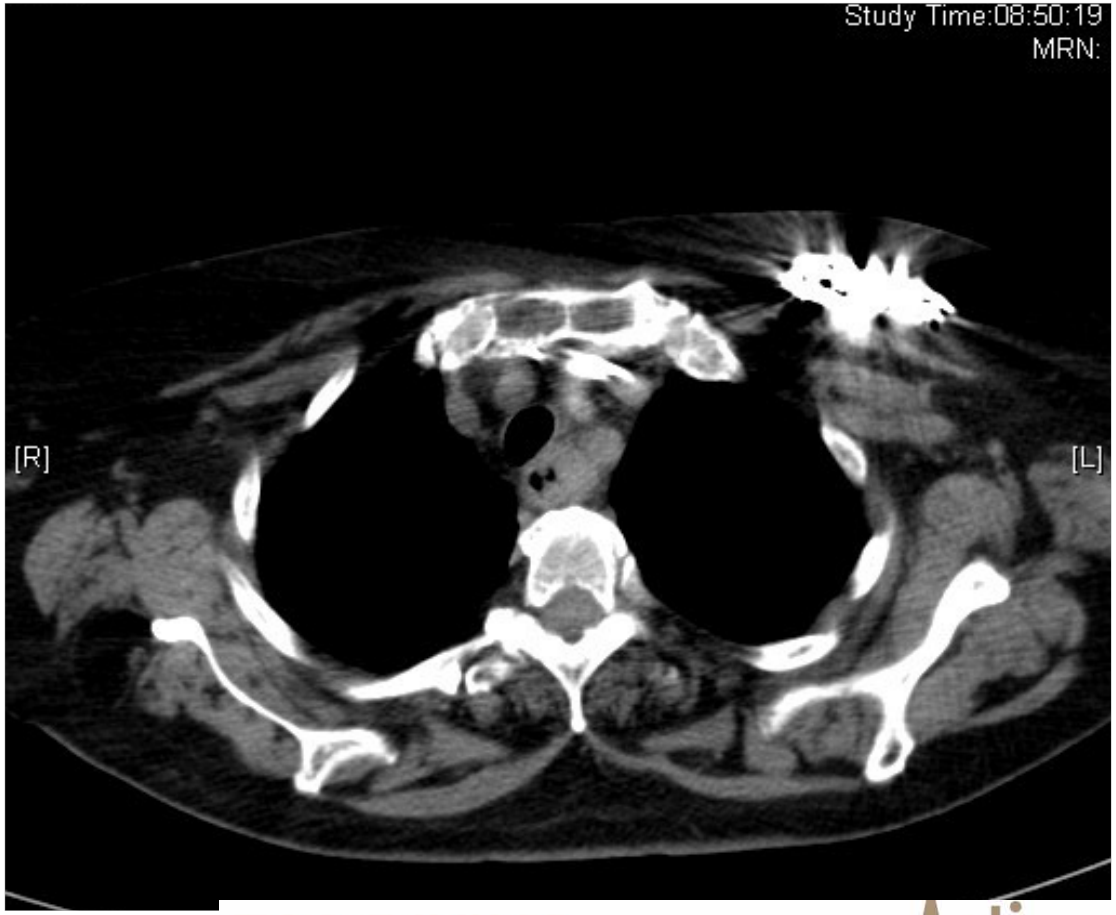
Further diagnostic work-up

EEG **normal**

EMG **no spontaneous activity of the abdominal muscles recorded**

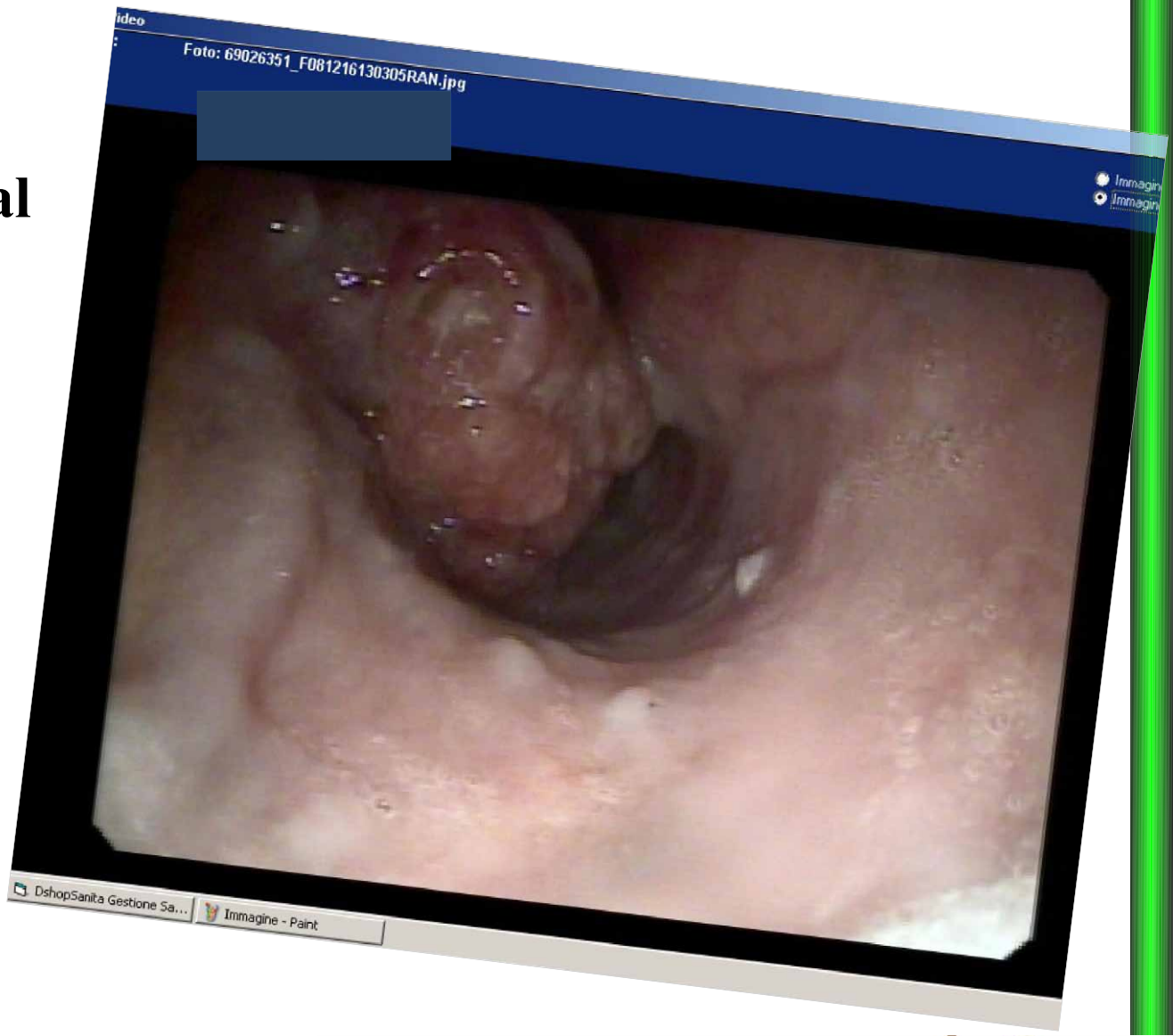
Cerebral CT **negative**

Further diagnostic work-up



S

Extensive vegetation 20 cm from the dental arch



tology

Severe squamous epithelial dysplasia in malignant transformation

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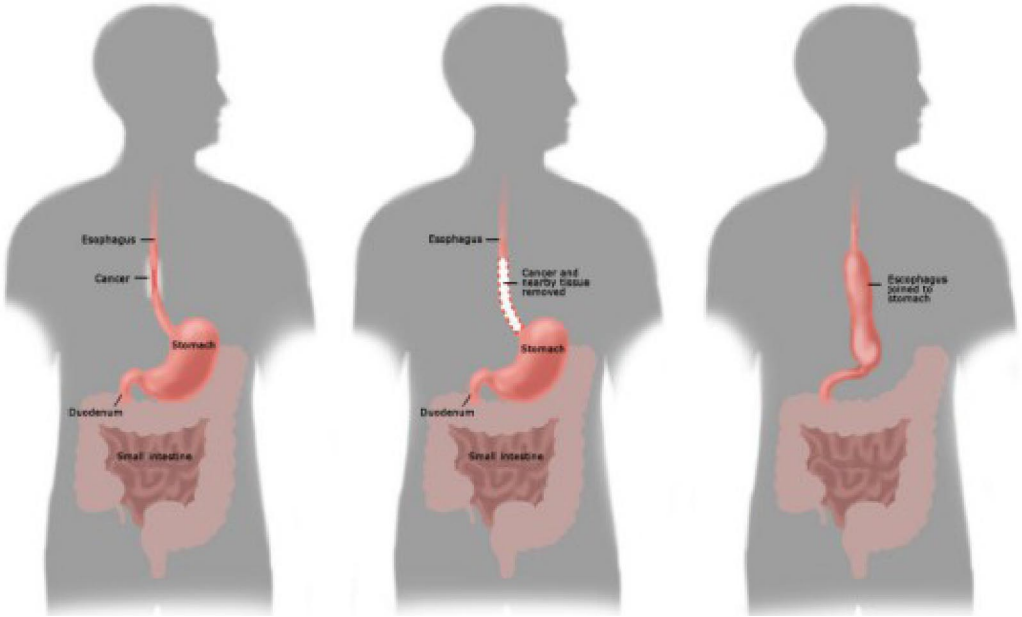
Treatment

- **Clonazepam 0,5/die up to 1 mg x 3**
- **Levosulpiride 25 mg x 3**
- **Droperidolo 2,5 mg**
- **New trial with Clonazepam 2 mg 1 cp x 3 (effective)**

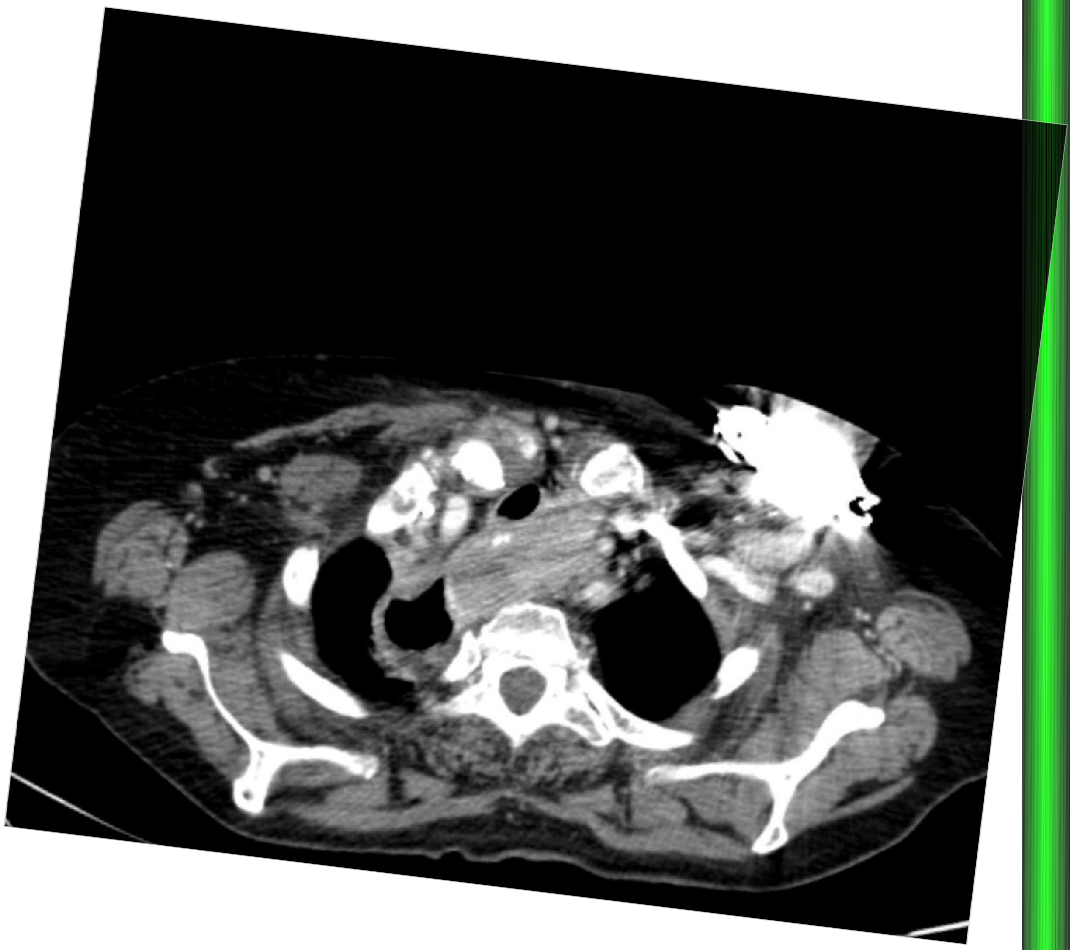
Surgery



- **Esophageal carcinoma resection (G2,pT3,pN0) with subtotal esophagectomy and esophago-gastroplasty and digiunostomy**

5 months later repeat CT

New solid 5 cm inhomogenous lesion at the cranial anastomosis protruding in the lumen and extending for 7 cm



Antony van Leeuwenhoek (1632-1723)

LEUWENHOEK, A. De generationem animalium, et de palpitatione diaphragmatis. *Phil. Tr., Lond.*, 32: 438, 1723.

Diaphragmatic Flutter*

Report of a Case and Review of Literature

MARIO RIGATTO, M.D. *and* NILO P. DE MEDEIROS, M.D.
Porto Alegre, Brazil

AMERICAN JOURNAL OF MEDICINE

IN 1723 Leuwenhoek [*1*], the father of microscopy, wrote in a letter to a friend that he "had been disturbed for three days by strong pulsations of the epigastric area which his doctor had diagnosed as palpitations of the heart." Nevertheless, after counting his arterial pulsations and observing that they were regular and slower than the epigastric movements, Leuwenhoek concluded that the epigastric beats had their origin in the diaphragm. Apparently, this was the first report in the literature of a case of diaphragmatic flutter, one of the most unusual disturbances of diaphragmatic motility

THE NEW ENGLAND JOURNAL OF MEDICINE Dec. 27, 1973

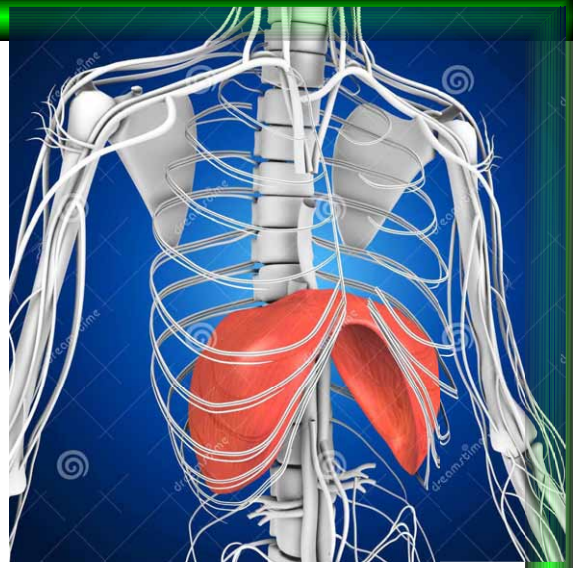
RESPIRATORY MYOCLONUS (LEEUWENHOEK'S DISEASE)

JAMES R. PHILLIPS, M.D., AND FREDERIC L. ELDRIDGE, M.D.

In the 250 years since Leeuwenhoek, only 48 additional cases have been reported. Most of the early cases are mentioned in a review article,[3] the remainder being referenced individually.[4-14]

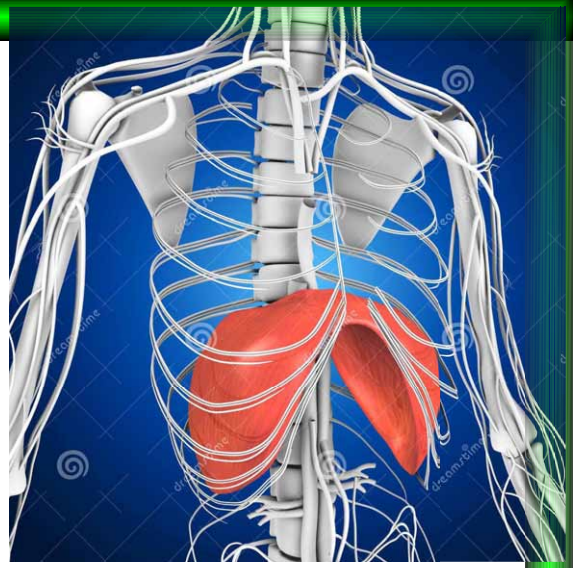
Altri 40 casi segnalati sino ad oggi di cui 9 pediatrici

Diaphragmatic flutter (1)



- **Unusual movement disorder with abnorml diaphragmatic activity, which may be associated with respiratory symptoms**
- **Diaphragmatic flutter called also "Respiratory myoclonus"**
- **Etiology: abnormal excitation of the phrenic nerve**
- **CNS: encephalitis, psychogenic origin …**
- **Irritating factors anywhere along the phrenic path (cervical rib, enlarged mediastinal lymphnodes, enlarged heart*, fractured xiphoid)**
- **Irritation of the diaphragma itself (pleurisy, peritonitis, ischemia)**

Diaphragmatic flutter (2)

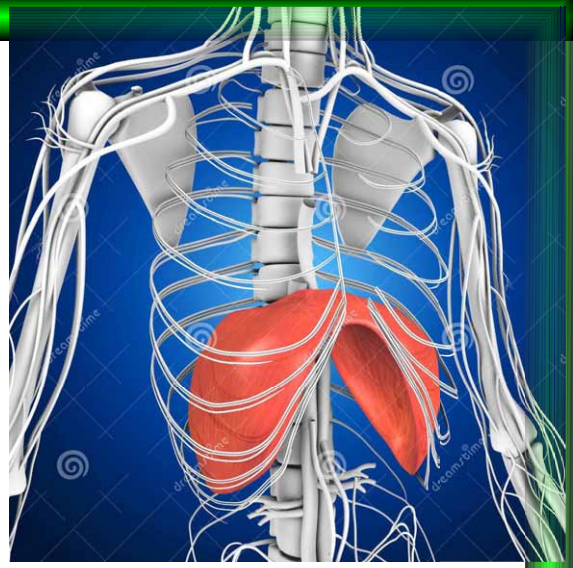


- Rate varied from case to case and on different occasions

- Amplitude and force: ..forceful enough to shake the bed.. too slight to transmit any movement to the chest or abdominal wall..

- Precipitating and suppressing factors: Emotional tension and excitement, cough, deep breathing, pressure on the abdomen, menstruation, sleeping*, deep inspiration, breath holding, speaking, walking, open mouth….

Diaphragmatic flutter (3)



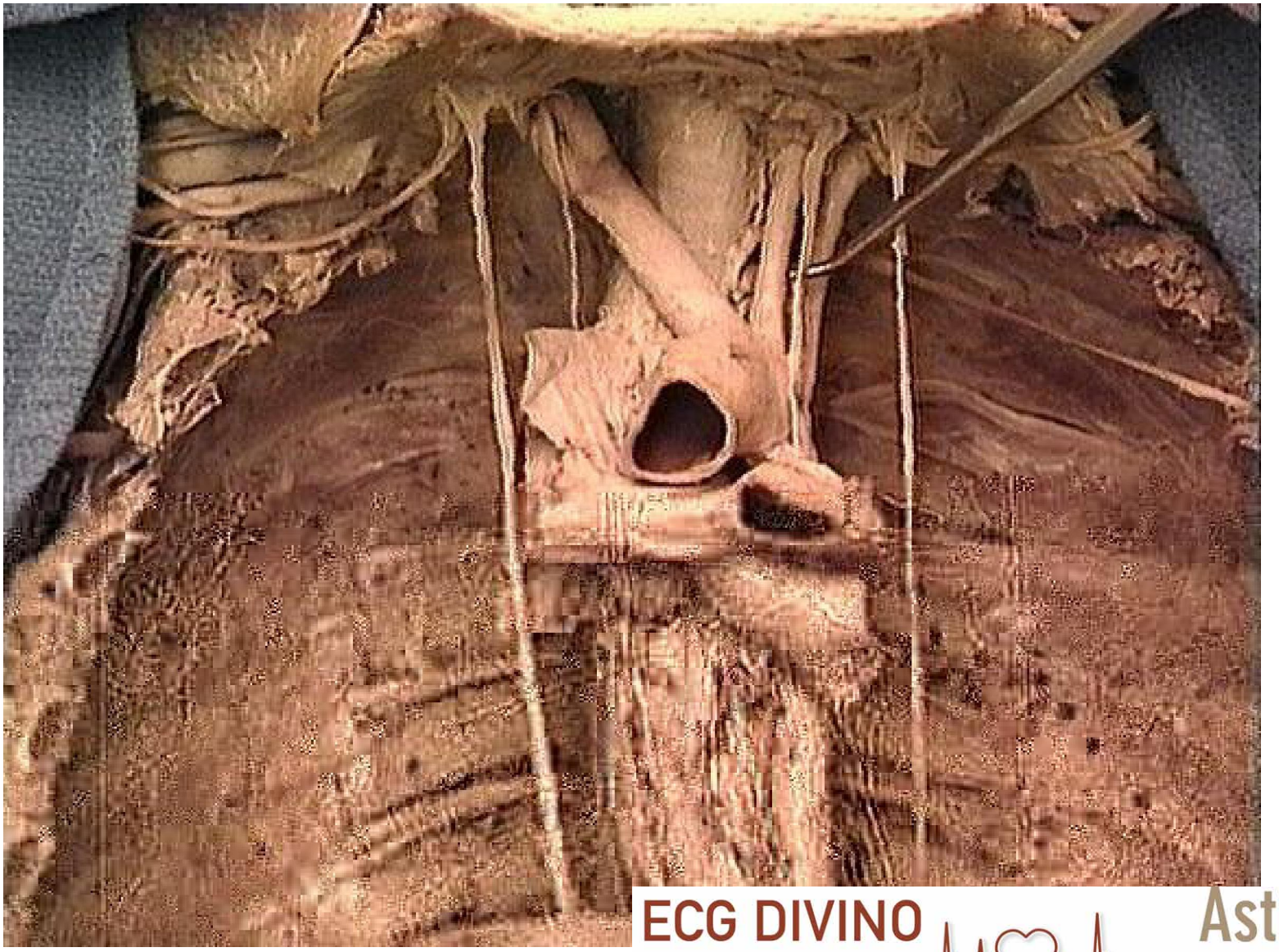
- Paroxysmal beats of the abdominal wall (especially the epigastric area) and/or the lower intercostal spaces, unrelated to the heart beat.

- Respiratory symptoms: interference with respiration, tachypnea of variable degree, respiratory alkalosis

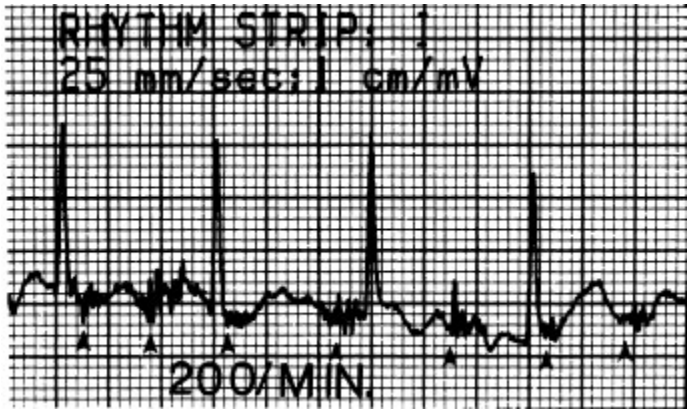
- Pain: abdominal wall, thoracic wall simulating angina pectoris, myocardial infarction or pericarditis

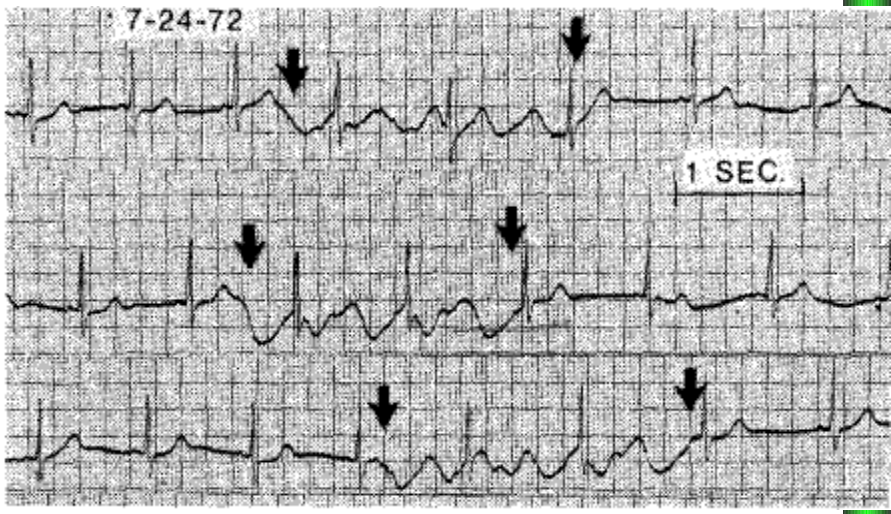
- Others: hiccups, inspiratory stridor, belching, retching

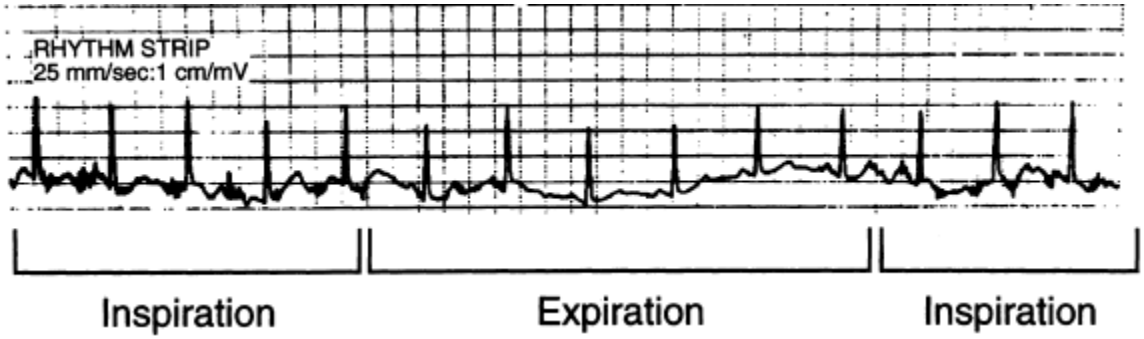
Phrenic nerve course



Diagnosis







Diagnostic work-up

- EEG
- EMG: abdominal rectus, intercostals and scalene muscles
- Needle EMG of the diaphragm
- Spirometry
- Cerebro-spinal MRI
- Chest CT with contrast

Treatment

The therapeutic approach to the symptoms of diaphragmatic flutter has been quite varied. Leeuwenhoek used port wine laced with nutmeg. Although there seemed to be some initial benefit, retrial after recurrence was ineffective. Long-term follow-up results

THE NEW ENGLAND JOURNAL OF MEDICINE Dec. 27, 1973

Treatment

DRUG

- Clonazepam*
- Lorazepam
- Diazepam
- Fluoxetina
- Clonidina
- Aloperidolo
- Carbamazepina*
- Difenildantoina*
- Gabapentin*
- Levetiracetam

DOSAGE

- High

PHRENICOTOMY

CONCLUSIONS

- Very rare reports in the literature
- Complex diagnosis
- Often unknown etiology
- Psychological factors
- High dosage therapy