Venicearrhythmias 2015
16 – 18 October 2015 Venice

Syncope 2015 update

Case Study n° 2

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CASE STUDY n° 2: history

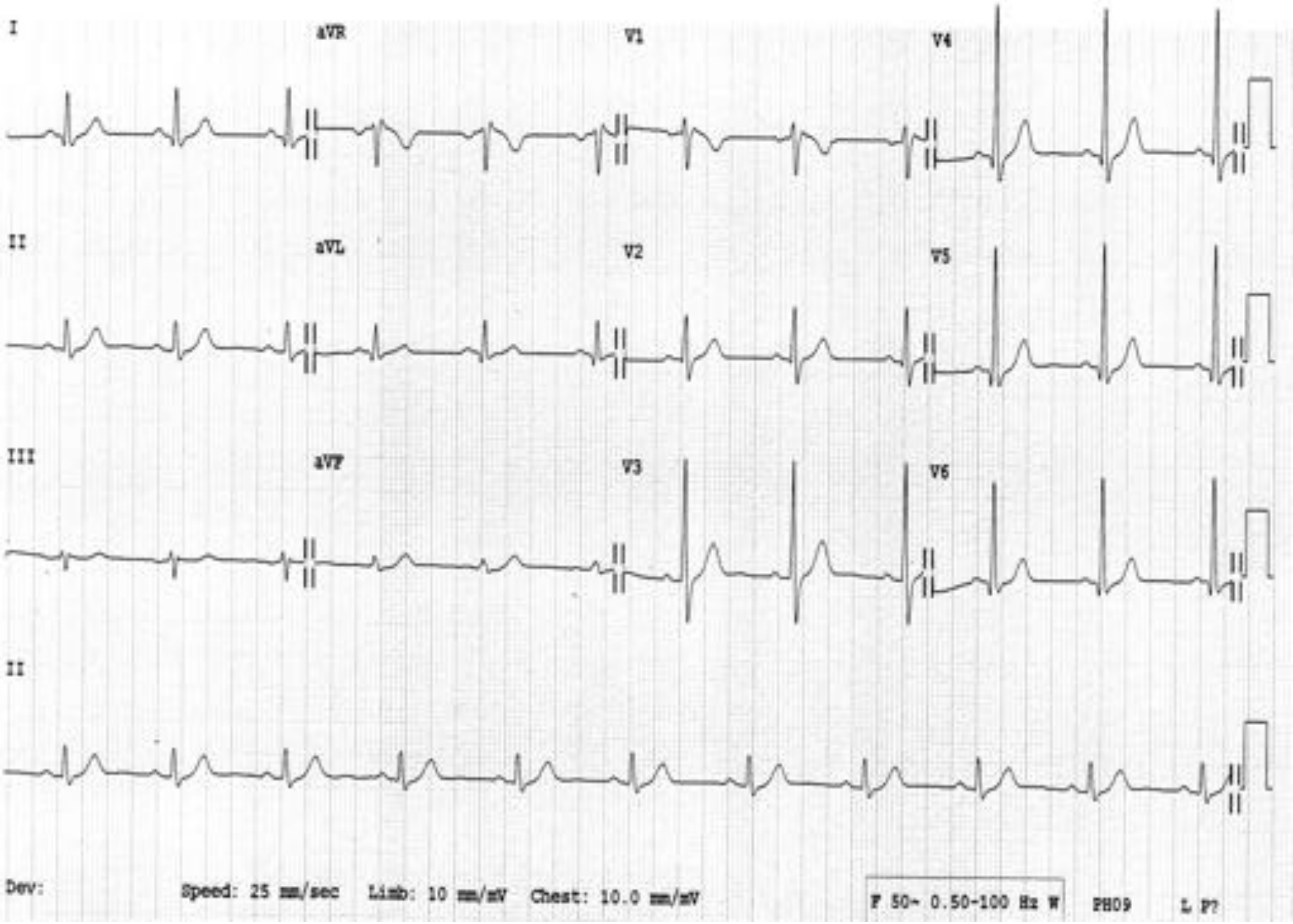
- 18-years-old girl was referred because of frequently recurrent syncopal episodes in the last 12 months (mean 1 episode/ week). Syncope occurred at rest and were always associated with nausea and pallor

- The girl was also complaining of fatigue, reduction of physical performance, sleeping disorders and oligomennorhea

- The girl was a student, and also a competitive athlete (endurance swimming 3 hours per day, 6 days a week), and she had severe psychological stress (family, school, and sports) in the last months

CASE STUDY n° 2: Initial evaluation

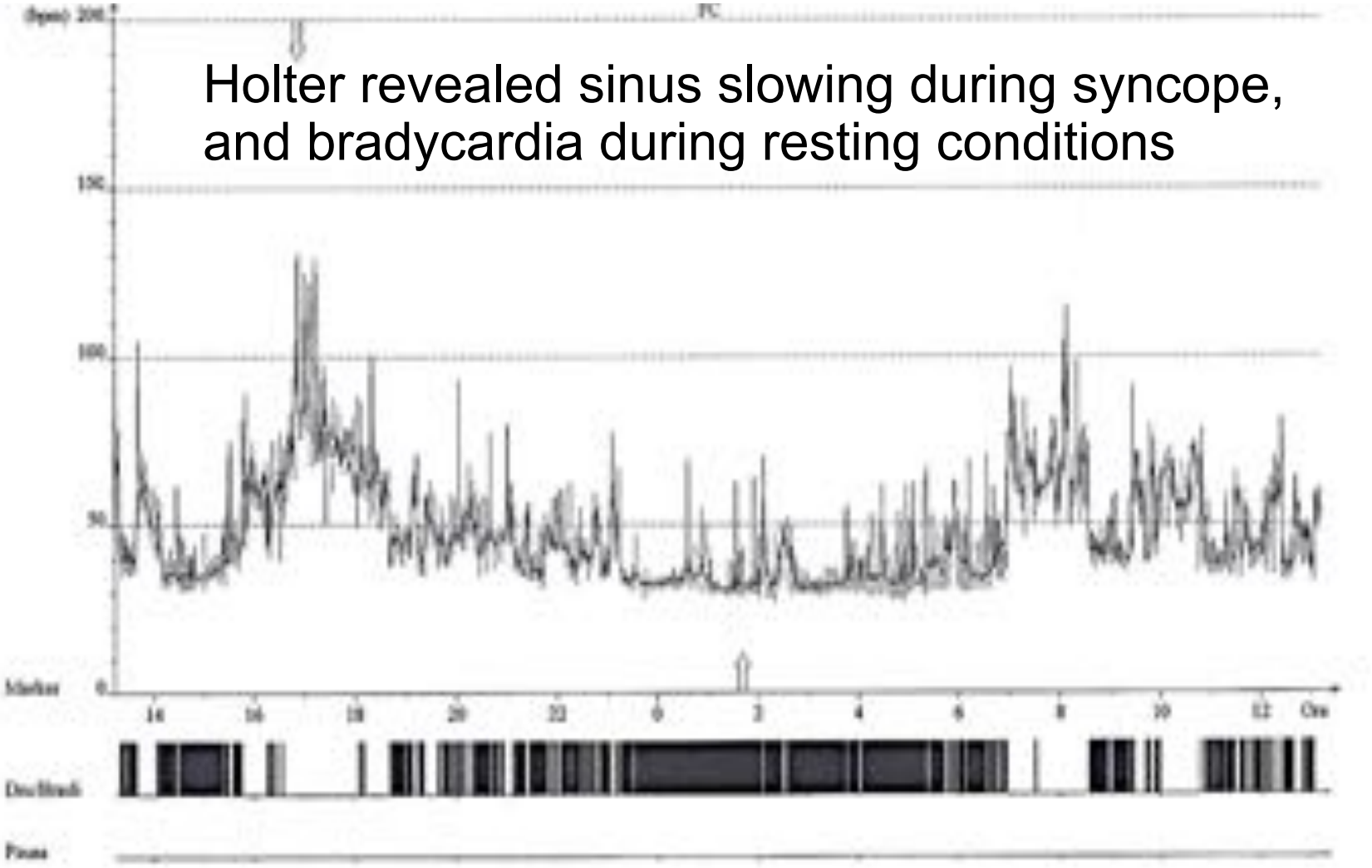
- Physical examination was normal (very “fitted” girl: body composition with bioimpedance analysis revealed a 10% of fat mass; body weight 60 Kg; height 170 cm)
- ECG resulted completely negative.


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Dev:
Speed: 25 mm/sec
Limb: 10 mm/mV
Chest: 10.0 mm/mV
F 50~ 0.50-100 Hz W
PH09
L P?

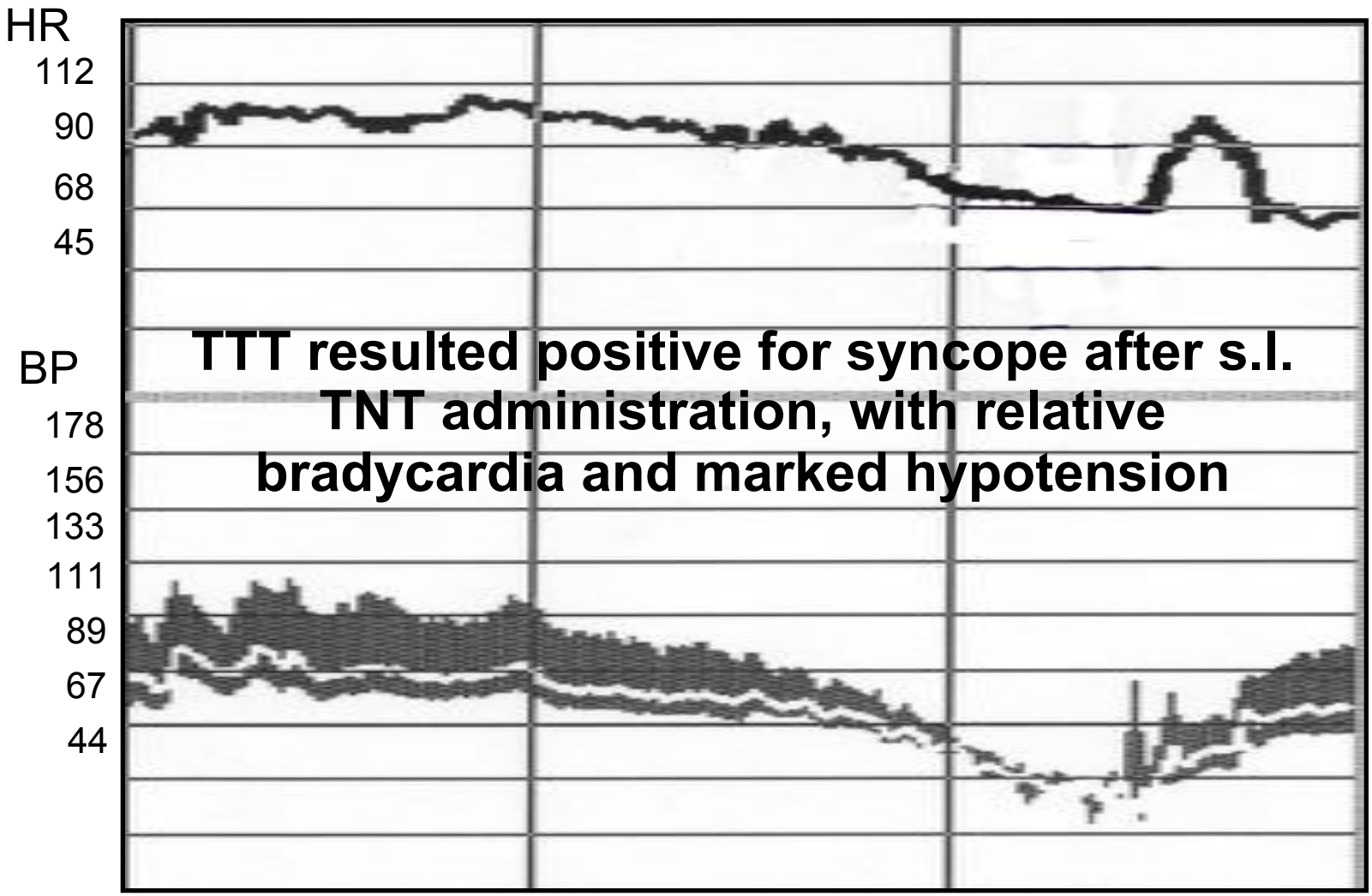
CASE STUDY n° 2: Further Investigations

1. None
2. Holter monitoring
3. Tilt Table Test
4. Echocardiogram

4 days Holter Monitoring

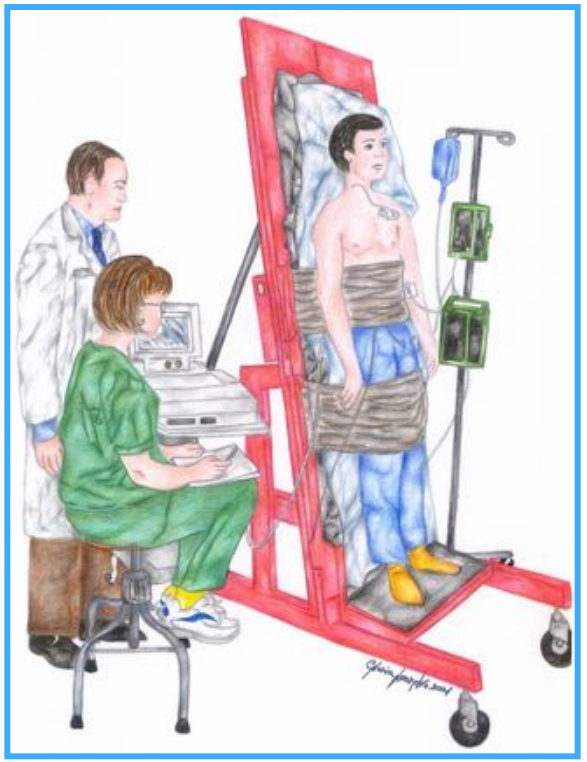


Tilt Table Test



Diagnostic value of TTT in Athletes

Concern regarding low test's specificity (risk of false positive response):



•training related orthostatic intollerance

TTT: Positive Rate in **Athletes without Syncope**

Author	N° Athletes	Gender	Age (yrs)	Sport	Positive Rate
Grubb 1993	10	6 M	26±3	Mixed	0/10 (0%)
Manari 1996	13	11 M	Young	Endurance	3/13 (23%)
Ferrario 1993	10	10 M	Young	Endurance	5/10 (50%)
Ferrario 1993	10	10 M	Young	Power	1/10 (10%)
Ferrario 1996	35	35 M	Young	Mixed	9/35 (26%)

Specificity: 50 - 100 %

Giada et al. Sports Med 2004

Increased of orthostatic intollerance and VVS in athletes

- ***Training-related factors:*** ↑ vagal tone; left ventricle hypertrophy with ↑ wall stress; ↓ peripheric vasoconstriction

- ***Other factors*** **:** doping, ect.

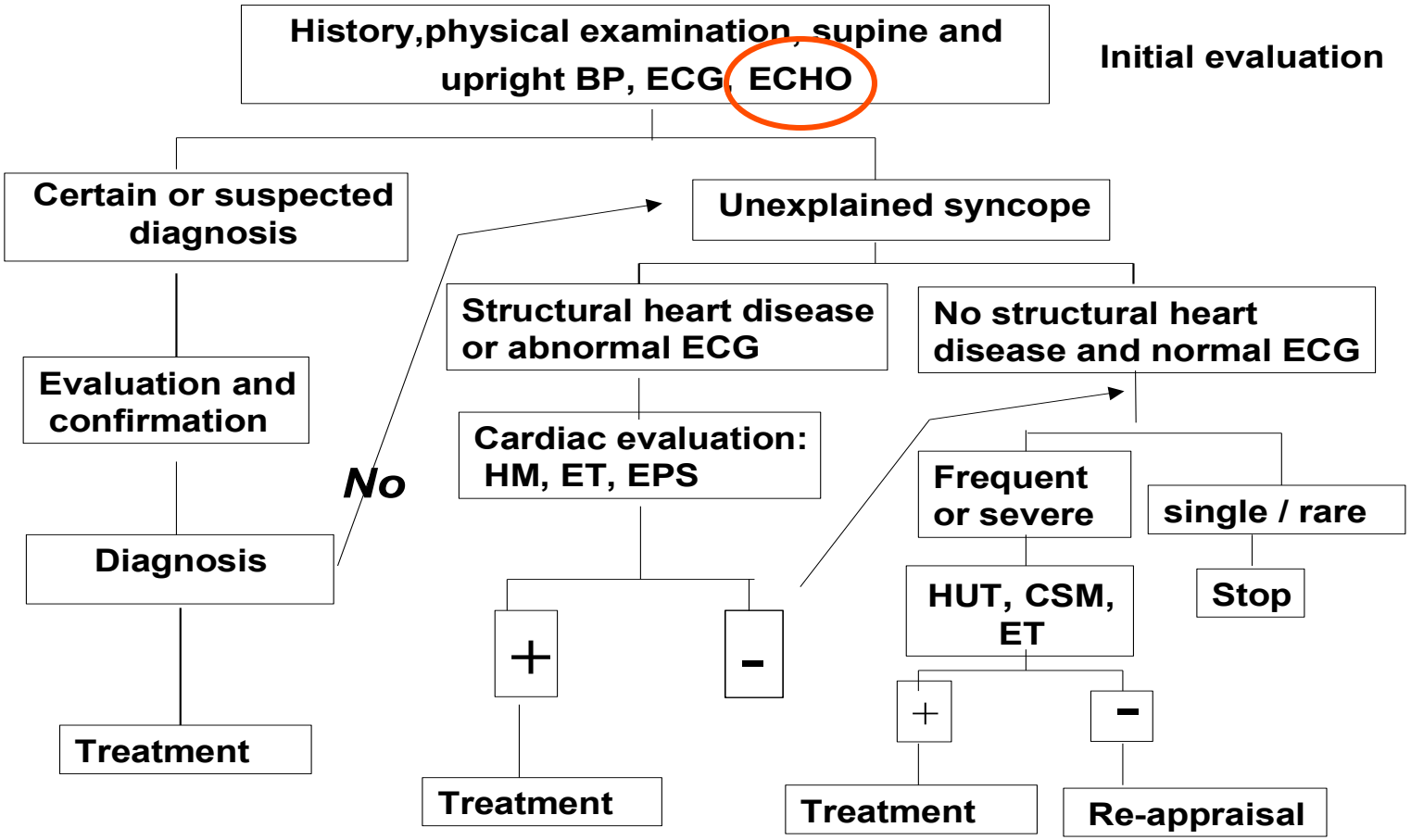
Italian Cardiological Guidelines for Sports Eligibility in Athletes with Heart Disease: Part 1

Alessandro Biffi[a], Pietro Delise[b], Paolo Zeppilli[c], Franco Giada[d], Antonio Pelliccia[a], Maria Penco[e], Maurizio Casasco[f], Pierluigi Colonna[g], Antonello D'Andrea[h], Luigi D'Andrea[h], Giovanni Gazale[i], Giuseppe Inama[j], Antonio Spataro[a], Alessandro Villella[k], Paolo Marino[l], Salvatore Pirelli[m], Vincenzo Romano[n], Antonio Cristiano[n], Roberto Bettini[o], Gaetano Thiene[p], Francesco Furlanello[q] and Domenico Corrado[r]

J Cardiovasc Med 2013

Athletes with Syncope: COCIS Flow-Chart

Because of low specificity of HUT and prognositic impact of CVD, ECHO should be included in the initial evaluation



Echocardiogram

- ECHO resulted completely negative
- “athlete’s heart”

CASE STUDY n° 2: Further Investigations

Correct answers: n° 2, 3, 4

CASE STUDY n° 2: Diagnostic Hypothesis

1. Neuromediated syncope

2. Syncope of bradyarrhythmic origin

3. Vasovagal syncope triggered by a concealed form of eating disorder and overtraining syndrome

4. Psychogenic syncope

CASE STUDY n° 2: 3 months follow-up (after only reassurance as therapy)

- Vasovagal symptoms persisted
- Decrease in body weight from 60 to 45 Kg (***BMI 15***)
- Development of complete amennorhea and mood disorder

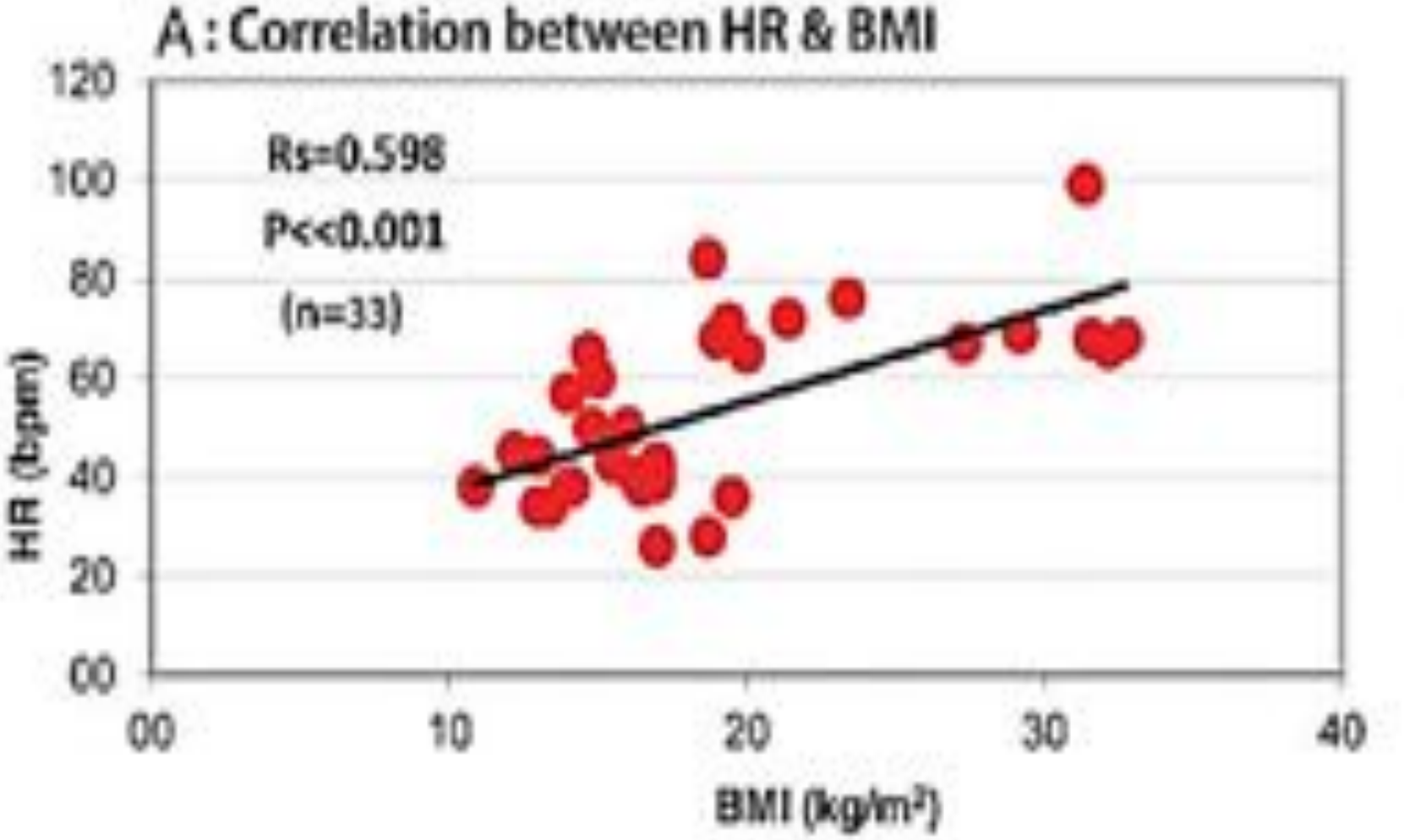
Table 2. Diagnostic Criteria for Anorexia Nervosa

- Refusal to maintain body weight at or above a minimally normal weight for age and height
- Intense fear of gaining weight or becoming fat, even though underweight
- Disturbance in the way one's weight or body shape is experienced; undue influence of body weight on self-evaluation or denial of seriousness of current weight
- Amenorrhea in postmenarchal females
- *Specify type:*
  - Restricting type: during current episode, the person has not regularly engaged in eating or purging behaviors
  - Binge-eating and purging type: during current episode, the person has regularly engaged in eating or purging behaviors

Adapted with permission from Diagnostic and Statistical Manual of Mental Disorders. *4th ed. rev. Washington, DC: American Psychiatric Association; 2000:589.*

Table 6. Medical Complications of Eating Disorders

Complication type	*Anorexia nervosa*
Cardiovascular	Arrhythmias
	Bradycardia
	Conduction defects (e.g., QTc prolongation)
	ECG abnormalities (e.g., low voltage, T-wave inversions, ST-segment depression)
	Hypotension
	Mitral valve prolapse
	Peripheral edema
	Sudden death


A : Correlation between HR & BMI
Rs=0.598
P<<0.001
(n=33)
HR (bpm)
BMI (kg/m²)
120
100
80
60
40
20
00
00
10
20
30
40

Med Sci Sports Exerc 2012

SPECIAL COMMUNICATIONS

Joint Consensus Statement

Prevention, Diagnosis, and Treatment of the Overtraining Syndrome: Joint Consensus Statement of the European College of Sport Science and the American College of Sports Medicine

Overtraining Symptoms

- Poor, non-restorative sleep
- Anxiety, irritability, sadness, loss of enjoyment
- Loss of appetite
- Gastrointestinal Disturbance
- Recurrent Infection
- Muscle soreness and weakness
- Poor Performance with the same or increased training
- Increased morning HR
- Reduced motivation
- Increased exercise RPE

Overtraining
Risk Factors

- Too much volume
- Too much intensity
- Too little recovery

- Excess competition
- Attempts to follow regular training while ill or injured
- Attempts to make up for time lost to illness/injury by increased training
- Psychosocial Stressors
- Poor nutrition

CASE STUDY n° 2: Diagnostic Hypothesis

Correct answer: vasovagal syncope triggered by a concealed form of eating disorder and overtraining syndrome

CASE STUDY n° 2: Therapy

- Complete training interruption
- Psychotherapy
- Nutritional support

After other 3 months:

increase in body weight (from 45 to 50 Kg), reduction of bradycardia, and no more syncopal spells

Thanks for your kind attention !

Definition of Overtraining and the Overtraining Syndrome

- **Overtraining:** A sharp increase in training volume, intensity, or frequency, up to near max capacity for the individual, that can be endured for only a short time (i.e., < 1 month).
- **Overtraining Syndrome:** The result of overtraining, a long-term fall in performance capacity, with RPE and fatigue increased and energy and mood decreased. (Also known as staleness.)