

Fabrizio Ammirati

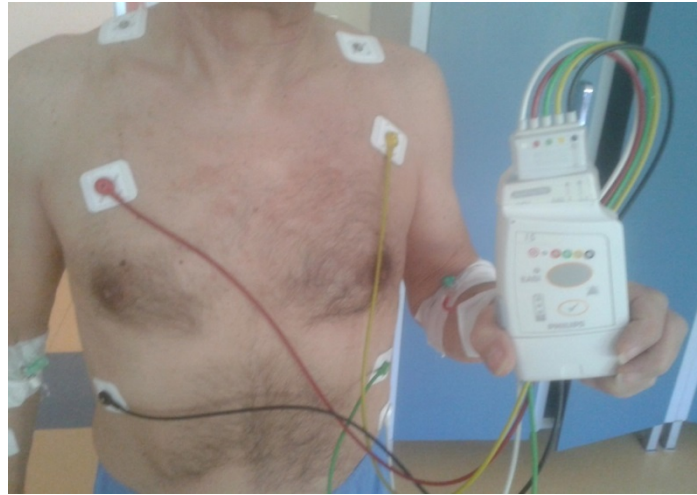
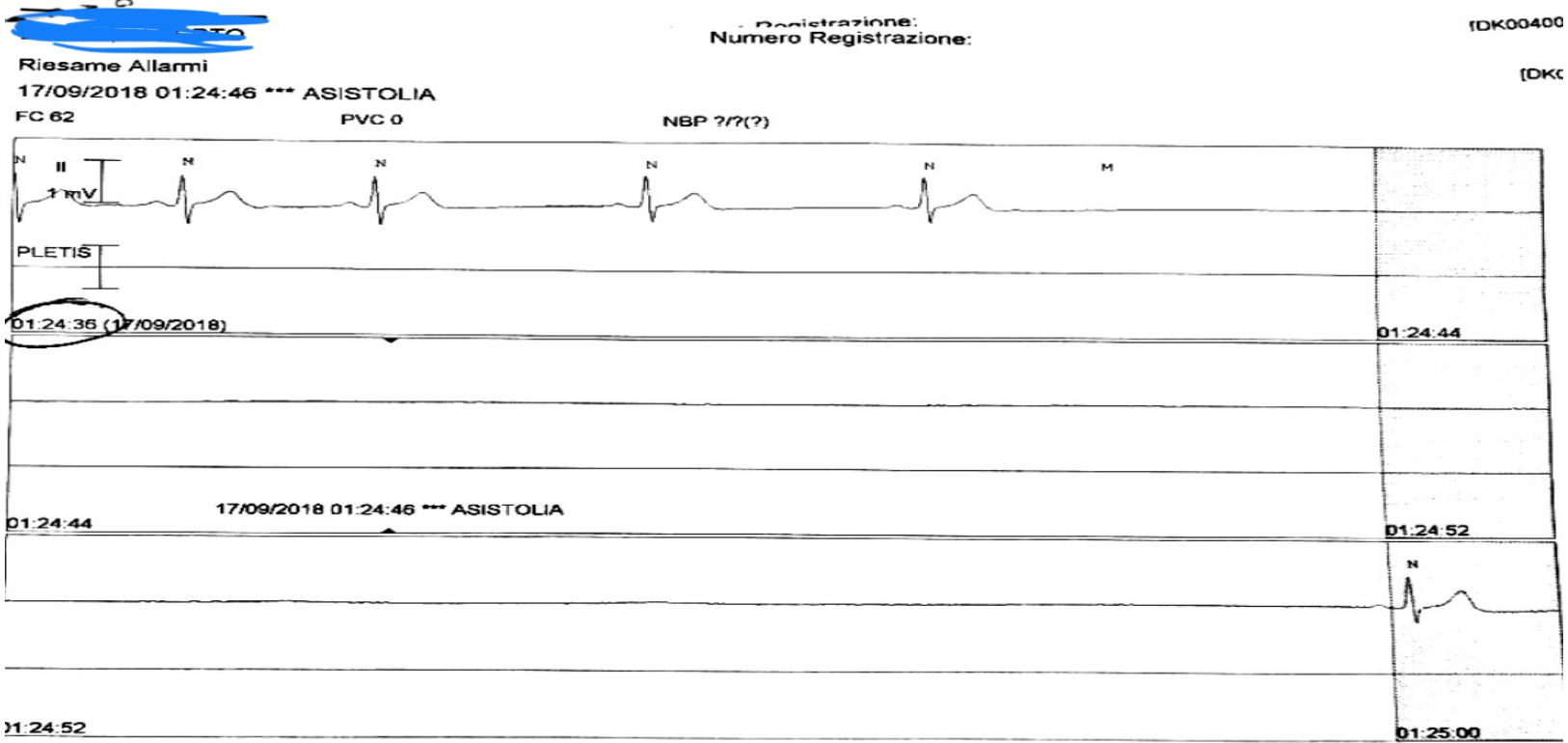
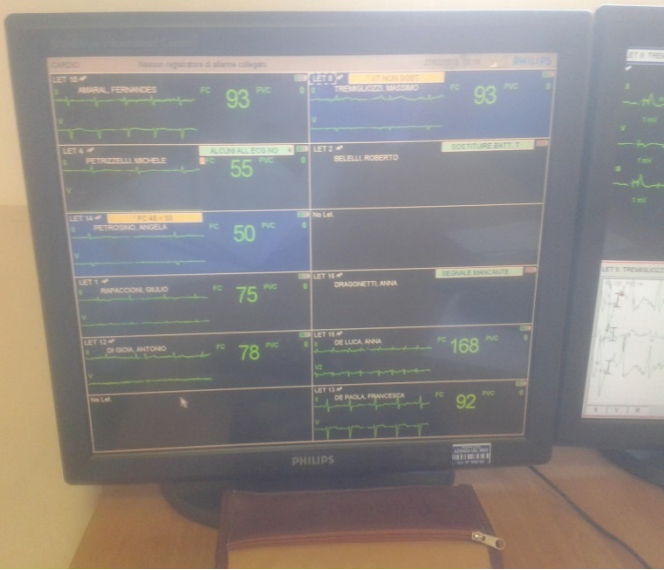
Il ruolo del tit test per la selezione dei pazienti per la
stimolazione cardiaca

Dipartimento Medicina

UOC Cardiologia

Osp. Grassi

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La Telemetria

Tilt testing

Recommendations	Class ^a	Level ^b
Indications		
Tilt testing should be considered in patients with suspected reflex syncope, OH, POTS, or PPS. ^{23,24,105–109,111–117}	IIa	B
Tilt testing may be considered to educate patients to recognize symptoms and learn physical manoeuvres. ^{119–121}	IIb	B
Diagnostic criteria		
Reflex syncope, OH, POTS, or PPS should be considered likely if tilt testing reproduces symptoms along with the characteristic circulatory pattern of these conditions. ^{23,24,105–109,111–117}	IIa	B
Additional advice and clinical perspectives		
<ul style="list-style-type: none"> ● A negative tilt table response does not exclude a diagnosis of reflex syncope. ● While sensitivity and specificity are at acceptable levels when measured in patients with VVS and healthy controls, in usual clinical settings of syncope of uncertain origin tilt testing suggests the presence of a <i>hypotensive susceptibility</i>, which may exist not only in reflex syncope but also with other causes of syncope including some forms of cardiac syncope. The concept of hypotensive susceptibility rather than diagnosis has important practical utility, because the presence or absence of hypotensive susceptibility plays a major role in guiding pacemaker therapy in patients affected by reflex syncope and in the management of hypotensive therapies, which are frequently present in the elderly with syncope (see sections 5.1 and 5.2). ● A positive cardioinhibitory response to tilt testing predicts, with high probability, asystolic spontaneous syncope; this finding is relevant for therapeutic implications when cardiac pacing is considered (see section 5.2.6). Conversely, the presence of a positive vasodepressor, a mixed response, or even a negative response does not exclude the presence of asystole during spontaneous syncope.^{122,123} ● Tilt testing may be helpful in separating syncope with abnormal movements from epilepsy.¹³⁷ ● Tilt testing may have value in distinguishing syncope from falls.²³ ● Tilt testing may be helpful in separating syncope from PPS. In suspected PPS, the tilt test should preferably be performed together with EEG monitoring; a normal EEG helps to confirm the diagnosis.^{116,117} In the absence of an EEG, a video recording will be helpful in confirming the diagnosis. ● Tilt testing should not be used to assess the efficacy of a drug treatment.¹¹⁸ 		

✓ Precisare la diagnosi di SVV ipotizzata con la valutazione preliminare (anamnesi, E.O.: ECG)

✓ Rendere il paziente consapevole dei sintomi indotti in contesto protetto (riconoscimento dei prodromi, benignità di una sincope sperimentata in presenza personale medico e infermeristico protettivo e rassicurante, ecc)

✓ Rassicurare il paziente consapevole del proprio disturbo (consapevolezza)

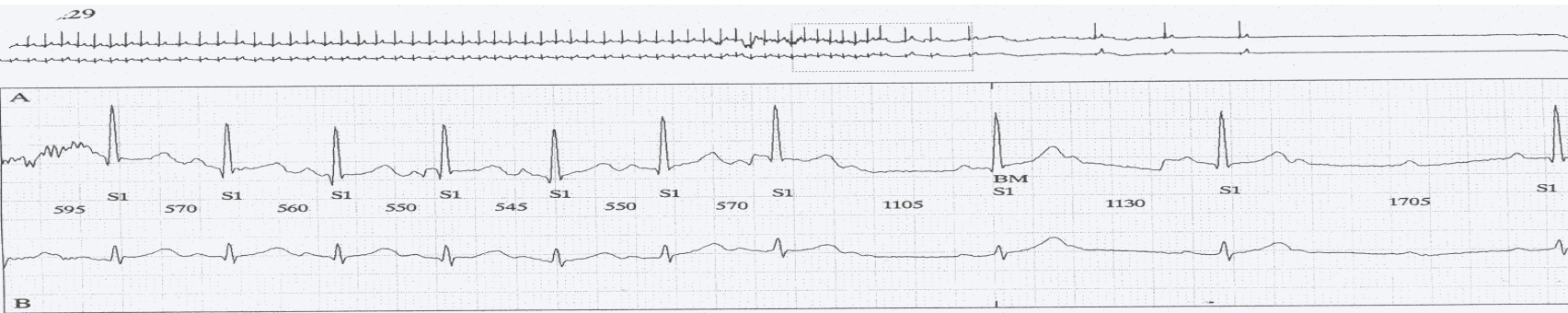
✓ Rendere il paziente confidente con la sincope

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EEG = electroencephalogram; OH = orthostatic hypotension; POTS = postural orthostatic tachycardia syndrome; PPS = psychogenic pseudosyncope; VVS = vasovagal syncope.
^aClass of recommendation.
^bLevel of evidence.

Sincope vasovagale di tipo cardioinibitorio. La frequenza cardiaca cala drasticamente con comparsa di blocco A-V avanzato ed asistolia prolungata

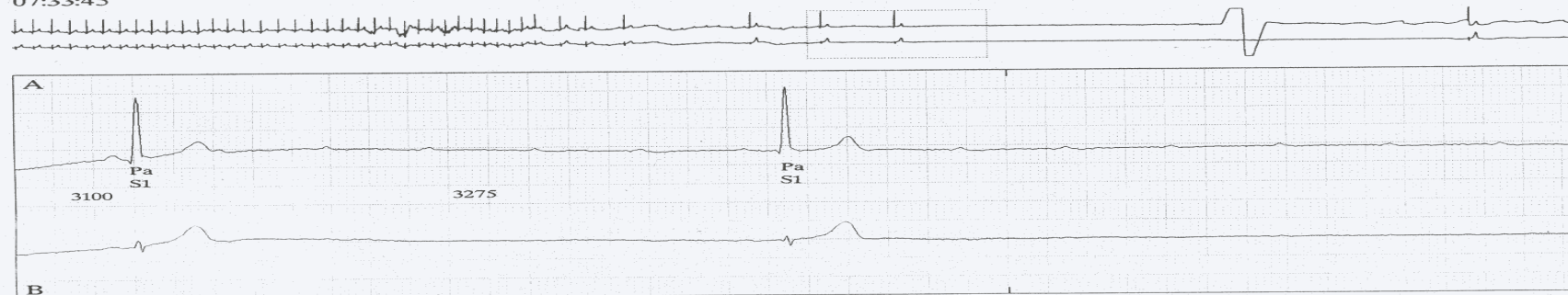
ISSUE-3 ha dimostrato che una risposta cardioinibitoria al tilt testing può predire delire una sincope cardioinibitoria spontanea documentata all'ILR



07:33:37



07:33:45



Sufficiente evidenza che PMK DDD dovrebbe essere considerato per ridurre (non azzerare) le ricorrenze sincopali quando i sintomi e l'ecg (cardioinibizione) correlano con i sintomi spontanei in pts >40 anni nella SVV e CSS

Dual-Chamber Pacing With Closed Loop Stimulation in Recurrent Reflex Vasovagal Syncope

The SPAIN Study

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ABSTRACT

BACKGROUND Pacing in vasovagal syncope remains controversial.

OBJECTIVES The authors evaluated dual-chamber pacing with closed loop stimulation (DDD-CLS) in patients with cardioinhibitory vasovagal syncope.

METHODS This randomized, double-blind, controlled study included Canadian and Spanish patients age ≥ 40 years, with high burden syncope (≥ 5 episodes, ≥ 2 episodes in the past year), and a cardioinhibitory head-up tilt test (bradycardia < 40 beats/min for 10 s or asystole > 3 s). Patients were randomized to either DDD-CLS pacing for 12 months followed by sham DDI mode pacing at 30 pulses/min for 12 months (group A), or sham DDI mode for 12 months followed by DDD-CLS pacing for 12 months (group B). Patients in both arms crossed-over after 12 months of follow-up or when a maximum of 3 syncopal episodes occurred within 1 month.

RESULTS A total of 46 patients completed the protocol; 22 were men (47.8%), and mean age was 56.30 ± 10.63 years. The mean number of previous syncopal episodes was 12 (range 9 to 20). The proportion of patients with $\geq 50\%$ reduction in the number of syncopal episodes was 72% (95% confidence interval [CI]: 47% to 90%) with DDD-CLS compared with 28% (95% CI: 9.7% to 53.5%) with sham DDI mode ($p = 0.017$). A total of 4 patients (8.7%) had events during DDD-CLS and 21 (45.7%) during sham DDI (hazard ratio: 6.7; 95% CI: 2.3 to 19.8). Kaplan-Meier curve was significantly different between groups in time to first syncope: 29.2 months (95% CI: 15.3 to 29.2 months) versus 9.3 months (95% CI: 6.21 months, NA; $p < 0.016$); odds ratio: 0.11 (95% CI: 0.03 to 0.37; $p < 0.0001$).

CONCLUSIONS DDD-CLS pacing significantly reduced syncope burden and time to first recurrence by 7-fold, prolonging time to first syncope recurrence in patients age ≥ 40 years with head-up tilt test-induced vasovagal syncope compared with sham pacing. (Closed Loop Stimulation for Neuromediated Syncope [SPAIN Study]; NCT01621464) (J Am Coll Cardiol 2017;70:1720-8) © 2017 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



European Society of Cardiology

European Heart Journal (2021) 42, 508–516

doi:10.1093/eurheartj/ehaa936

FASTTRACK CLINICAL RESEARCH

Arrhythmias

Cardiac pacing in severe recurrent reflex syncope and tilt-induced asystole

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Received 12 August 2020; revised 26 September 2020; editorial decision 19 October 2020; accepted 3 November 2020; online published ahead of print 5 December 2020

See page S17 for the editorial comment on this article (doi: 10.1093/eurheartj/ehaa975)

Aim

The benefit of cardiac pacing in patients with severe recurrent reflex syncope and asystole induced by tilt testing has not been established. The usefulness of tilt-table test to select candidates for cardiac pacing is controversial.

Methods and results

We randomly assigned patients aged 40 years or older who had at least two episodes of unpredictable severe reflex syncope during the last year and a tilt-induced syncope with an asystolic pause longer than 3 s, to receive either an active (pacing ON; 63 patients) or an inactive (pacing OFF; 64 patients) dual-chamber pacemaker with closed loop stimulation (CLS). The primary endpoint was the time to first recurrence of syncope. Patients and independent outcome assessors were blinded to the assigned treatment. After a median follow-up of 11.2 months, syncope occurred in significantly fewer patients in the pacing group than in the control group [10 (16%) vs. 34 (53%); hazard ratio, 0.23; $P = 0.00005$]. The estimated syncope recurrence rate at 1 year was 19% (pacing) and 53% (control) and at 2 years, 22% (pacing) and 68% (control). A combined endpoint of syncope or presyncope occurred in significantly fewer patients in the pacing group [23 (37%) vs. 40 (63%); hazard ratio, 0.44; $P = 0.002$]. Minor device-related adverse events were reported in five patients (4%).

Conclusion

In patients aged 40 years or older, affected by severe recurrent reflex syncope and tilt-induced asystole, dual-chamber pacemaker with CLS is highly effective in reducing the recurrences of syncope. Our findings support the inclusion of tilt testing as a useful method to select candidates for cardiac pacing.

Study registration

ClinicalTrials.gov identifier NCT02324920, Eudamed number CIV-05-013546.

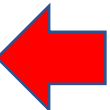
Sintomi severi: sincopi frequenti (almeno 3 negli ultimi 2 anni)

Sincope non prevedibile: senza prodromi

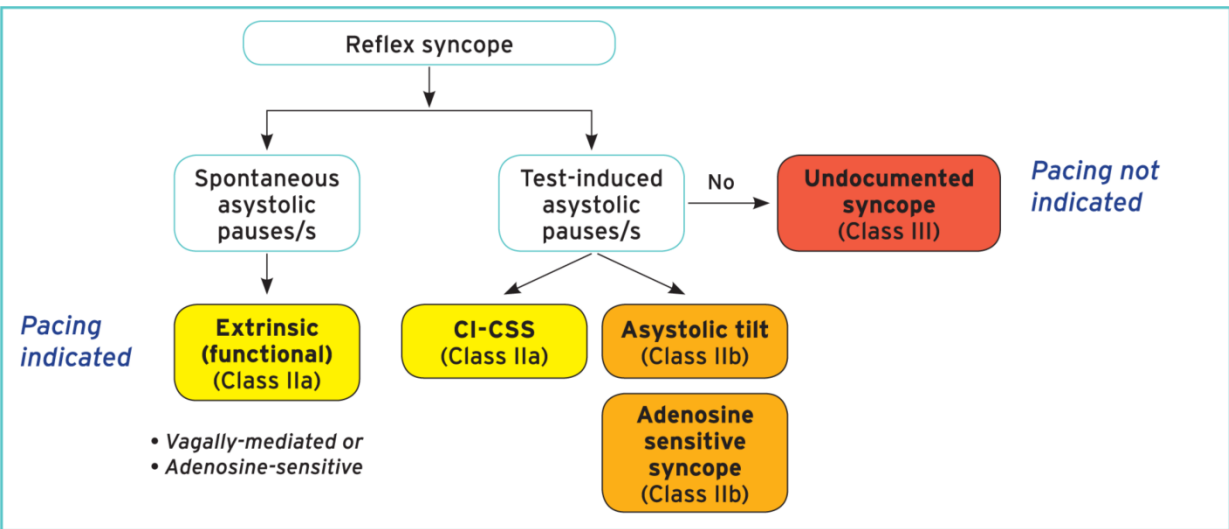
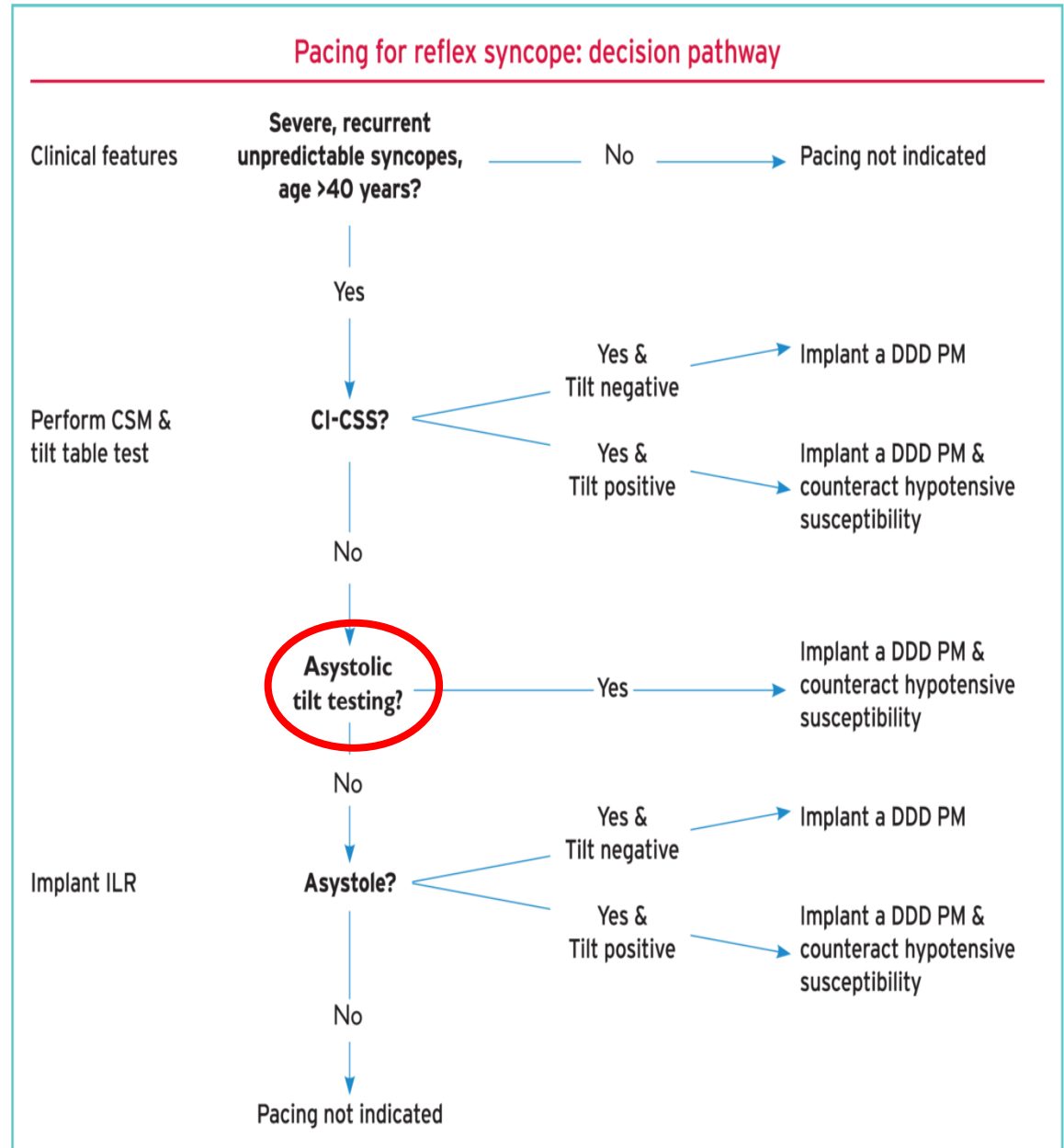
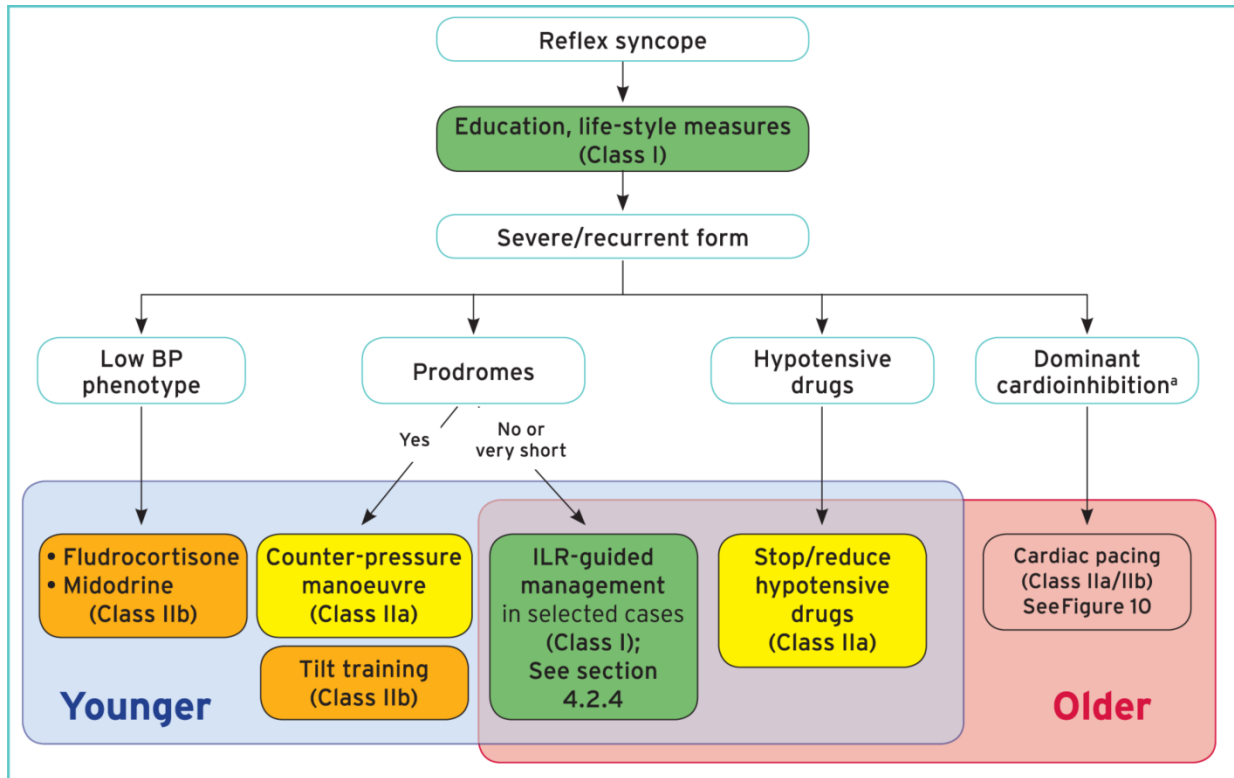
Ridotta qualita' della vita

New recommendations in 2021 (9)

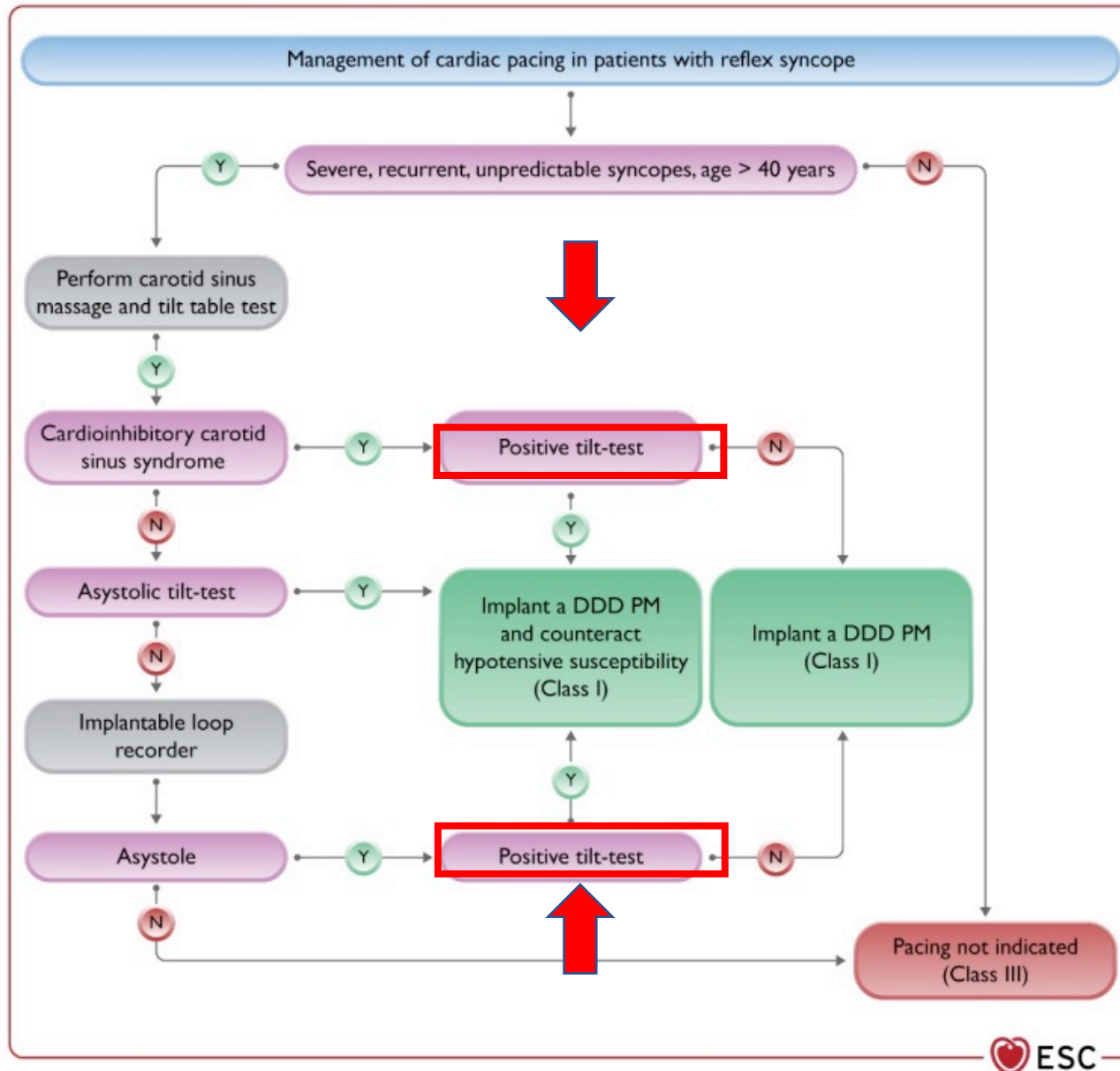
Recommendations	Class	Level
Cardiac pacing for bradycardia and conduction system disease (continued)		
Dual chamber cardiac pacing is indicated to reduce recurrent syncope in patients <u>aged >40 years</u> with <u>severe, unpredictable, recurrent</u> syncope who have: <ul style="list-style-type: none"> • spontaneous documented symptomatic asystolic pause/s >3 s or asymptomatic pause/s >6 s due to sinus arrest or AVB; or • cardioinhibitory carotid sinus syndrome; or • asystolic syncope during tilt testing. 	I	A
In patients with recurrent unexplained falls, the same assessment as for unexplained syncope should be considered.	IIa	C
Cardiac pacing is not indicated in the absence of a documented cardioinhibitory reflex.	III	B







Decision pathway for cardiac pacing in patients with reflex



Carotid massage

Once carotid stenosis is ruled out^a, carotid sinus massage is recommended in patients with syncope of unknown origin compatible with a reflex mechanism or with symptoms related to pressure/manipulation of the carotid sinus area.

I	B
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Tilt test

Tilt testing should be considered in patients with suspected recurrent reflex syncope.

IIa	B
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DDD = dual-chamber, atrioventricular pacing; PM = Pacemaker
 Note: Cardioinhibitory CSS is defined when the spontaneous syncope is reproduced by the CSM in the presence of an asystolic pause >3 s; asystolic tilt positive test is defined when the spontaneous syncope is reproduced in the presence of an asystolic pause >3 s. A symptomatic asystolic pause(s) >3 s or asymptomatic pause(s) >6 s due to sinus arrest, AVB, or the combination of the two similarly define asystole detected by ILR.
 Figure adapted from Brignole *et al.*, Eur Heart J (2018). doi: 10.1093/eurheartj/ehy037.

Criticità e conclusioni

- ✓ La sincope rimane un argomento ostico per la maggioranza dei medici e la sua gestione rappresenta una vera sfida clinica soprattutto per la terapia
- ✓ IL TT in genere appare come un esame difficile da organizzare e realizzare e che richiede voglia e competenza
- ✓ Richiede almeno minime conoscenze per la sua esecuzione (protocolli ancora non standardizzati dunque con sensibilità e specificità variabile) e per la sua interpretazione (es se negativo non esclude SVV, se positivo va valutato il riflesso e il setting clinico)
- ✓ TT Provoca una sincope indotta, la sincope spontanea viene considerata spesso conclusiva
- ✓ Richiede comunque un ambiente ambulatoriale ma protetto in genere ospedaliero
- ✓ Esame non gradito ai pazienti (ne temono la pericolosità)
- ✓ Esame non gradito ai medici per la tempistica e le implicazioni organizzative e assistenziale (ripresa della coscienza , assistenza dopo la sincope in caso di ripresa lenta, informazioni al paziente e ai familiari, ecc)

Quando è più facile decidere per impianto di PMk nella sincope vaso-vagale

Table 9 Expected syncope recurrence rates with a permanent pacemaker in different clinical settings (for more details see *Supplementary Data Table 9*).

Clinical setting	Expected 2-year syncope recurrence rate with cardiac pacing
Syncope due to established bradycardia and absence of hypotensive mechanism	High efficacy ($\leq 5\%$ recurrence rate)
Syncope due to established bradycardia and associated hypotensive mechanism	Moderate efficacy (5–25% recurrence rate)
Syncope due to suspected bradycardia and associated hypotensive mechanism	Low efficacy ($> 25\%$ recurrence rate)

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- ✓ Dimostrazione di cardioinibizione in sincope spontanea (loop recorder)
- ✓ In soggetti più anziani
- ✓ Frequenti ricorrenze sincopali anche nonostante rassicurazione e informazione sulle manovre di prevenzione
- ✓ Riduzione qualità della vita (Valutazione psicologica e/o psichiatrica nei giovani appena sopra i 40anni per non peggiorare la qualità della vita)
- ✓ Assenza di prodromi causa di traumi maggiori o incidenti
- ✓ Lavori a rischio per se e per gli altri

Da tenere presente prima di impiantare un pacemaker anche se dimostrata cardioinibizione soprattutto in pazienti non anziani

CARATTERISTICHE PSICOLOGICHE DEI PAZIENTI CON DIAGNOSI DI SINCOPE

- storia frequente di traumi infantili, correlata ad un'insorgenza molto precoce del primo episodio sincopale;
- relativa incapacità di elaborare e regolare le emozioni
- stile di attaccamento ansioso-insicuro;
- mancanza di consapevolezza rispetto alla relazione tra sincope e eventi di vita (alissitimia) ;
- disconoscimento del sintomo;
- narrazioni confuse

Interazione Cervello- Cuore : malattie neurologiche

Esempio cefalea a grappolo – sincope e cardioinibizione