

Supplementary material 1

Real-Time Syncope Unit Case Report

Supplementary S1 provides a real-time case report of a patient evaluated within the Syncope Unit, reflecting routine clinical documentation produced after expert assessment and protocolised investigations. For the CE phase, the patient's medical history, history-taking (including cardiovascular risk-factors, allergy status, and social history), physical examination, ECG, and active standing test (AST) were included. When GPT-5 assessed the CE phase, it was provided with these CE data only. For the EE phase, all information from the CE phase plus the complete set of additional investigations was provided to GPT-5; thus, when GPT-5 assessed the EE phase, it had access to both the CE data and the full additional test results.

Male, 74 years old

Cardiovascular history

2019: De novo atrial fibrillation without a clear precipitating factor. CHA2DS2-VASc 2.

2020 chronic atrial fibrillation

Additional medical history

Hypertension

Hypercholesterolaemia

2018 Posterior vitreous membrane detachment

Use of medication:

nifedipine tablet 30 mg, 2dd 1 tablet

triamterene/hydrochlorothiazide tablet 50/25 mg, 1dd 1 tablet

dabigatran etexilate capsule 150 mg, 2dd 1 capsule

atenolol tablet 100 mg, 1dd 1 tablet

History:

He reports that approximately 11 years ago he experienced loss of consciousness for the first time in his life. He was driving the truck and had just entered the highway. He already had some abdominal pain. His visual field diminished and then he lost consciousness, during which he ended up on the

crash barrier. Observations, duration, etc. unclear.

After this, he did not experience any further episodes until 20-5-2022. He had had a few glasses of wine and was on holiday in Crete. His abdomen began to rumble somewhat. He went to the toilet during the night and then lay back down in bed. Ten minutes later it still did not feel right and he went to the toilet again. Nothing came. He wanted to stand up; however, without prodromes, loss of consciousness occurred. His wife heard a hard blow from fall and called out. He did not respond. Duration maximally 5 minutes. At the time pale, sweating and cold. No other observations and it is unclear whether the eyes were open or closed. No urinary incontinence or tongue bite. He regained consciousness and it was reasonably well. No specific complaints. He lay down in bed and then continued sleeping.

He was admitted in Crete, with an echocardiogram and a potassium of 3.1.

In addition, he experiences palpitations approximately 1–2 times per month. Especially when lying on his left side. This is not different and consistent with his atrial fibrillation.

In daily life, no complaints of chest pain, nocturia, orthopnoea, dyspnoea, paraesthesias, blurred vision, tinnitus, headache and/or loss of strength.

Fluid intake per day is approximately 2000 cc

Social: married, has no children, worked as a truck driver.

Risk-factors for cardiovascular disease:

DM: no, HT: yes, HC: yes, smoking: no, alcohol: social drinker, drugs: no, family history: mother had cardiac arrest around the age of 80 years, premature cardiac death in the family: no

Allergy: None

Physical examination:

Height: 180 cm, weight: 80 kg. A well-appearing man is seen with a blood pressure of 110/60 mmHg and a heart rate of 86/min. The central venous pressure in the neck is not raised; a normal upstroke is palpable and no murmur is audible. Auscultation reveals normal heart sounds with vesicular breath

sounds over the lung fields. The abdomen is soft and shows normal peristalsis with variable tympany.

The extremities are smooth and normal pulsations

Additional investigations

ECG: Atrial fibrillation with a ventricular response of 86/min, intermediate axis, QRS duration 103 ms (incomplete RBTB), QTc duration 414 ms, no ST-T deviations, no signs of LVH, no atrial dilatation, no pathological Q wave, poor R-wave progression. ECG the same as previous ECG

Lab: Hb: 9.4 creatinine: 92 sodium: 135 potassium: 3.4 eGFR: 70 serum glucose: 6.1 TSH: 1.6

Exercise stress test: Findings: The patient achieves 125 Watt, 91% of predicted (137 Watt).

Heart rate increases from 81 bpm to 134 bpm (91% of target HR).

Blood pressure decreases from 136/92 mmHg to 124/69 mmHg and then increases again in recovery.

ST changes: -

Rhythm: Atrial flutter / atrial fibrillation

Conduction: -

Reason for stopping: Stopped due to falling blood pressure, without symptoms

Symptoms: None

Echocardiogram: Report echo Crete:

- left ventricle of normal size with good overall systolic function without partial stimuli (EF=55%)
- a large degree of left atrial fibrillation is observed (33 cm²)
- right cavities of normal dimensions, with good functionality
- ascending aortic dilatation is observed (4.4 cm)
- pericardium free
- degenerative lesions of the mitral valves and calcification of the aorta without restriction in their opening

- DOPPLER: mild mitral regurgitation MR 1+/4+
- mild aortic insufficiency AR 1+/4+
- mild trileaflet insufficiency TR 1+/4+ with estimated systolic pressure of the pulmonary artery approximately

Echocardiogram:

Normal left ventricular dimensions and function. LVEF > 55%.

Normal RV dimensions and function. RV pressure 22 mmHg. IVC slim with normal collapse. Low suspicion of PHT.

Bi-atrial dilatation.

Mild mitral regurgitation.

Aortic valve sclerosis. Calcified tip RCC. Mildly dilated aortic sinus (4.2 cm) with mild aortic regurgitation. Effaced STJ. Ascending aorta 3.8 cm.

Orthostatic measurements:

Blood pressure supine: 110/60 mmHg,

Blood pressure immediately standing: 100/70 mmHg,

Blood pressure standing after 1 minute: 110/80 mmHg,

Blood pressure standing after 3 minutes: 120/80 mmHg

Supplementary Table S1

Diagnostic-Precision-Score

Example of the calculation of the penalty score and the Diagnostic-Precision-Score. DPS: diagnostic precision score; FND = Functional Neurological Disorder.

For example, if a participant provided the largest list of six differential diagnosis, including the final diagnosis and five incorrect ones. First the penalty score for each incorrect diagnosis would be $1 \div 5 = 0.20$. The DPS for that case would then be: $+1 - (5 \times 0.20) = 0$. If the final diagnosis was not included at all, no point was awarded, but the penalty-score is still applied to all diagnosis in the list, resulting in a negative DPS of $-(6 \times 0.20) = -1.20$. This method ensures that concise accurate diagnostic reasoning was rewarded, while excessive or unfocused differential diagnoses lists were penalized accordingly.

Differential Diagnosis	Included Final diagnosis	Calculation with penalty score 0.20*	DPS
Cardiac syncope, Reflex syncope, FND	Yes	+1 – (2 × 0.20)	0.60
Orthostatic hypotension, Reflex syncope	Yes	+1 – (1 × 0.20)	0.80
Cardiac syncope	No	0 – (1 × 0.20)	–0.20
Cardiac syncope, FND, unexplained T-LOC	No	0 – (3 × 0.20)	–0.60
Reflex syncope, Orthostatic hypotension, Cardiac syncope, FND, unexplained T-LOC	Yes	+1 – (4 × 0.20)	0.20

* Penalty score see Methods

Supplementary Table S2

Determinants and their association with GPT-5 diagnostic inconsistency for CE and EE

Determinants are grouped by clinical domain (Demographics, Syncopal event, Vital signs, Additional evaluation, Scores, Other). The adjacent columns indicate for each determinant whether it was significantly associated with correct GPT-5 classification in the CE and/or EE phase. Entries denote statistical significance. CE = Core Evaluation, EE = Extended Evaluation

Group	Determinant	CE	EE
Demographics	Age	0.460	0.633
	<40 year	0.177	0.157
	40-60 year	0.922	0.630
	>60	0.072	0.095
	Gender	0.743	0.890
	Length (centimeter)	0.967	0.231
	Weight (kilogram)	0.739	0.502
	Body Mass Index	0.647	0.928
	Race	0.993	1.000
	Marital status	-	-
	Married	0.380	0.942
	Unmarried	0.678	0.678
	Divorced	0.710	0.946
	Widow	0.122	0.858
	Smoking		
	Smoking	0.945	0.379
	Non-smoking	0.939	0.712
Ex-smoking	0.752	0.200	
Alcohol	0.300	0.981	
Substance use	1.000	1.000	
Syncopal Event	Frequency syncope	0.102	0.792
	Frequency of syncope last 12-months	0.251	0.601
	Duration of loss of consciousness	0.942	0.506
	Duration of syncope recovery	0.486	0.535
	Duration prodromes	0.311	0.436
	Frequency prodromes last 12-months	0.340	0.498

Before syncopal event

Dizziness	0.670	0.248
Visual black-out	0.999	0.752
Immediately after eating	1.000	1.000
Little or no food intake	-	-
Prolonged sitting	0.999	0.999
Prolonged standing	-	-
Rapid standing	0.668	0.092
Medication intake within 1 hour before syncope	-	-
Confusion	-	-
Stopped and remained standing	-	-
Stopped and sat down	-	-
Stopped and lay down	-	-
Chest pain	-	-
Dyspnea	0.999	0.999
After exertion	0.999	0.999
Sweating	0.179	0.289
Cold hands and feet	1.000	1.000
Fatigue	-	-
Warm sensation	0.999	0.999
Palpitations	0.575	0.999
Paresthesia before syncope	1.000	1.000
Relief with deep breathing	-	-
En route to the toilet	0.214	0.140
At toilet	1.000	1.000
After toilet	1.000	1.000
Excess insulin administration	-	-
Fasting	-	-
Psychological stress	1.000	1.000
Alcohol intake	0.999	0.999
Drug intake	-	-
Cold environment	-	-
Warm environment	0.943	0.764
Anxiety	-	-
Pain	0.999	0.999
Stopped due to drinking	-	-
Cough	1.000	1.000
During drinking	-	-
Hair grooming	-	-
Stretching	-	-
Nausea	0.773	0.999
Vomiting	-	-
Speech disturbance	-	-
Muscle weakness	0.999	0.999
Headache	1.000	1.000
Vertigo	1.000	1.000
Visual flashes	-	-
Visual disturbance	-	-
Hearing disturbance	-	-
Shaking	1.000	1.000

During syncopal event	Mood swings	-	-
	Memory disturbance	-	-
	Thought disturbance	-	-
	Exposure to toxic substances	-	-
	Heartburn	-	-
	During medical procedure	0.773	0.274
During syncopal event	Confused	-	-
	Behavior recall	-	-
	Responsiveness	-	-
	Memory	-	-
	Facial color	-	-
	Change in breathing pattern	1.000	1.000
	Muscle jerks	0.999	0.999
	Urinary incontinence	0.314	0.999
	Defecation	1.000	1.000
	Head turning	-	-
	Eye deviation	0.999	0.999
	Tongue biting	-	-
	Sweating	0.999	0.752
After syncopal event	Symptoms	0.876	0.413
	Confusion	0.687	0.999
	Fatigue	0.029	0.998
	Sweating	0.999	0.999
	Warm sensation	-	-
	Mood swings	1.000	1.000
	Numbness	0.814	1.000
	Paresthesia	1.000	1.000
	Nausea	0.892	0.781
	Vomiting	0.999	0.506
	Dizziness	0.398	0.999
	Headache	0.926	0.850
	Worsening headache after syncope	1.000	1.000
	Injury	0.428	0.019
	Pain	0.213	0.029
Syncope-related pain	0.999	0.999	
Determinant Syncopal Event	Amount of predominant factors before syncope	0.145	0.382
	Amount of factors at the moment of syncope	0.020	0.058
	Amount of factors after syncope	0.811	0.050
Vital Signs	Systolic blood pressure	0.701	0.803
	Diastolic blood pressure	0.823	0.599
Additional diagnostic	Abnormal exercise stress testing	-	-
	Blood pressure drop active standing test	-	-
	Carotid sinus massage	0.999	0.999

	Abnormal electrocardiogram	0.991	0.962
Scores	ChadsVasc score	0.216	0.077
	OESIL score	0.304	0.905
	San Francisco Syncope Rule	0.714	0.777
	EGSYS score	1.000	1.000
	Seizure/syncope score	0.610	0.764
	Historical score	0.836	0.661
	Vasovagal score	0.575	0.449
Other	Fluid intake	0.763	0.478
Words Syncope Letter	Total words in syncope unit letter	0.054	0.992
	Syncope unit letter: Only medical info from history taken	0.425	0.392
	Syncope unit letter: Medical info from past history, history taken, medication, cardiac risk factors and allergy	0.059	0.940