

Case Discussion

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Patient Profile

- ID: 3164373J
- Gender: male
- Age: 36-year-old
- Occupation: professor
- Smoking: nil
- Family history: DM

Chief Complaint

- Stomach burning for months

Past Medical History

- Gastric ulcer
- Allergic rhinitis

Course



2024

- Stomach burning for months
 - Body weight loss(-)
 - Acid reflux(-)

2024.07.18

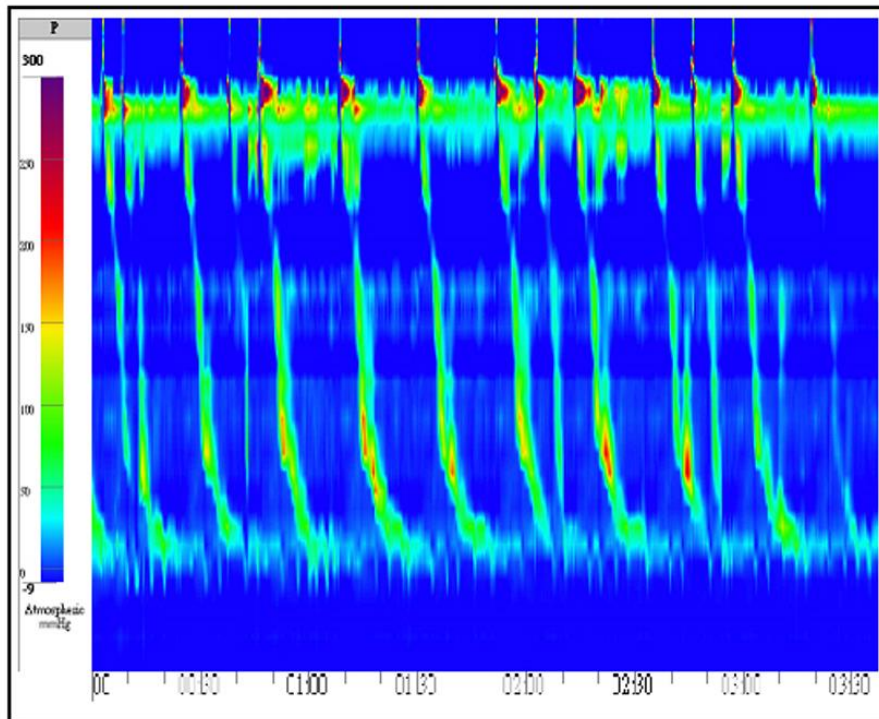
- EGD(2024/7/18)
 - Mild GERD, Gastritis
- Mosapride, Buscopan, Dexilant

2024.07.22

- HRM (2024.8.19)
- 24H PH (2024.10.23)
- Stool H.P & OB (-)
- Abdominal sonography: mild fatty liver & GB polyp

High resolution esophageal manometry (supine)

Average of 10: Wet swallow 5 ml - Supine Analysis type: Esophageal



Esophagus

DCI	1833 mmHg.s.cm
Peristaltic breaks	3.0 cm
Distal Latency	7.0 s

UES

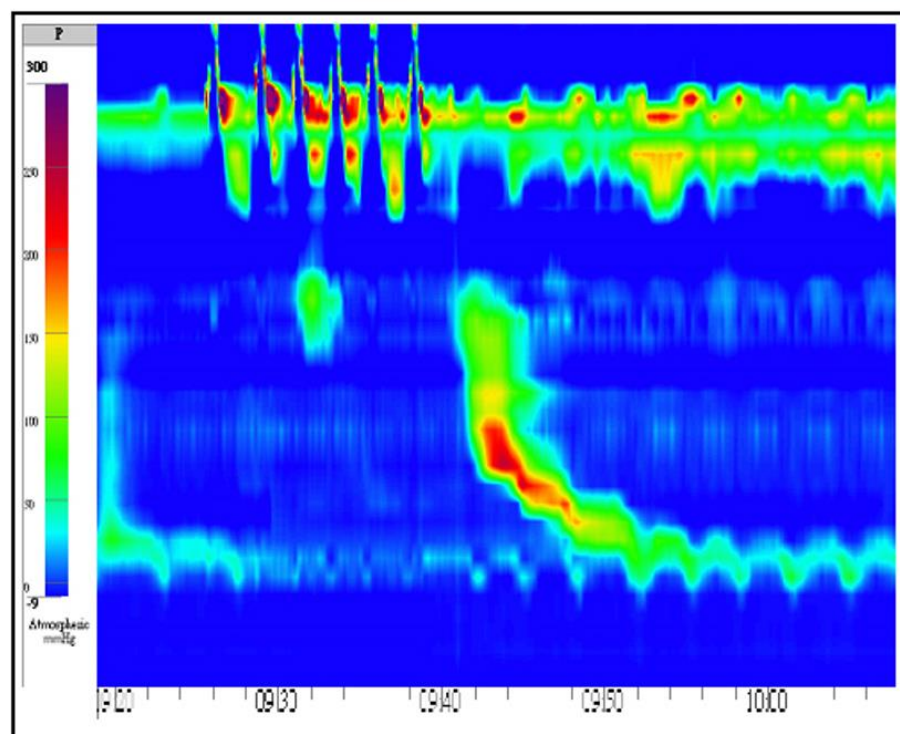
Upper border	18.4 cm
IRP 0.2 s	1.8 mmHg
IRP 0.8 s	26.2 mmHg
UES Relaxation Time	0.5 s
UES Max Admittance	2.8 mS

LES

Upper border	43.0 cm
IRP 4 s	24.2 mmHg
Intraabdominal length	1.5 cm

Impedance

Bolus transit	Complete
Bolus transit percentage	100 %



Scoring

Peristaltic integrity	Weak
Contraction pattern	Premature
Intrabolus pressure pattern	Unknown pressurization
Contraction vigor 3	Normal
Contraction pattern 3	Premature
Contraction pattern 4	Premature

Esophagus

DCI	4957 mmHg.s.cm
Peristaltic breaks	3.2 cm
Distal Latency	4.4 s
Onset velocity	1.0 cm/s
Peak velocity	0.9 cm/s

Impedance

Bolus transit	Complete
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LES

Upper border	43.0 cm
IRP 1 s	15.4 mmHg
IRP 2 s	17.5 mmHg
IRP 3 s	19.5 mmHg
IRP 4 s	21.2 mmHg
IRP 5 s	22.7 mmHg
Intraabdominal length	1.5 cm

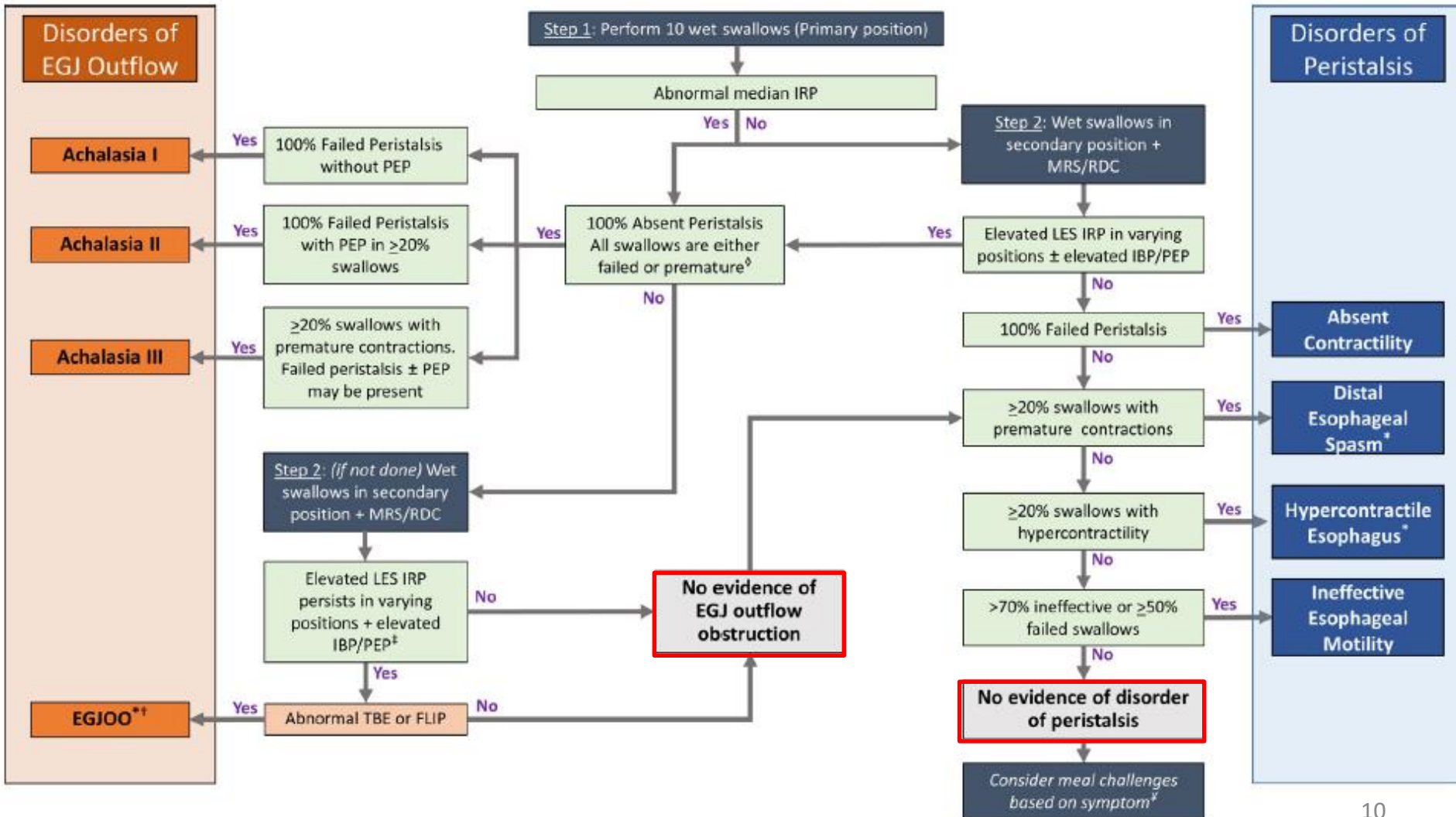
UES

Upper border	18.4 cm
IRP 0.2 s	6.1 mmHg
IRP 0.4 s	11.9 mmHg
IRP 0.6 s	41.8 mmHg
IRP 0.8 s	72.6 mmHg
IRP 1.0 s	93.2 mmHg
UES Relaxation Time	0.4 s

Scoring parameter percentages³

Scoring 3		Intrabolus pressure pattern	
Normal	80 %	Normal	0 %
Ineffective	20 %	EGJ	0 %
Failed contraction	10 %	Compartmentalized	0 %
Premature	0 %	Panesophageal	0 %
Hyper	0 %	Unknown pressurization	100 %
Fragmented	0 %		

Chicago classification(version 4.0)



MII-pH monitor

■ Acid-distal esophagus

■ Acid %time distal

[Total] **1.5** (<4.2%) [Upright] 2.4 (<6.3%) [Supine] 0.0 (<1.2%)

■ No. of reflux distal

[Total] **169** (<80) [Upright] 169 [Supine] 0

■ Reflux clearance time (sec)

■ Symptom index

[Total] **57.1** (<50%)

■ Symptom association probability

[Total] **98.4** (<95%)

■ DeMeester score

[Total] 4.7 (<14.7)

MII-pH monitor

- Acid-pharynx

- Acid %time pharynx

- [Total] 0.0% (<1.3%) [Upright] 0.0% (<1.3%) [Supine] 0.0% (<0.0%)

- No. of pharyngeal acid reflux (PAR)

- [Total] 0 (<1) [Upright] 0 (<1) [Supine] 0 (<1)

MII-pH monitor

[SYMPTOM-REFLUX ASSOCIATION]

■Heartburn

No. of symptoms related to acid reflux 4

No. of symptoms not related to reflux 3

Symptom index (<50%) **57.1%**

[CONCLUSIONS]

■Reflux Hypersensitivity (RH)

MII-pH monitor

[Note]

1. MNBI:

Z1 7806 Z2 3608 Z3 2821

Z4 3755 **Z5 3466** **Z6 2896**

(Normal >2500)

2. Number of reflux: **169** times (Normal <80)

3. The patient stopped taking anti-reflux medications for more than two weeks

4. Symptom index: 57.1%, Symptom association probability: 98.4%

5. R/O **Non-acid reflux**

Bernstein test

First perfusion of 30 ml of **normal saline** for 5 min.

At (5) min (0) sec, (30) ml of normal saline produced

■ No symptoms

Second perfusion of 30 ml of 1N **HCL** for 5 min.

At (10) min (0) sec, (30) ml of 1N HCL produced

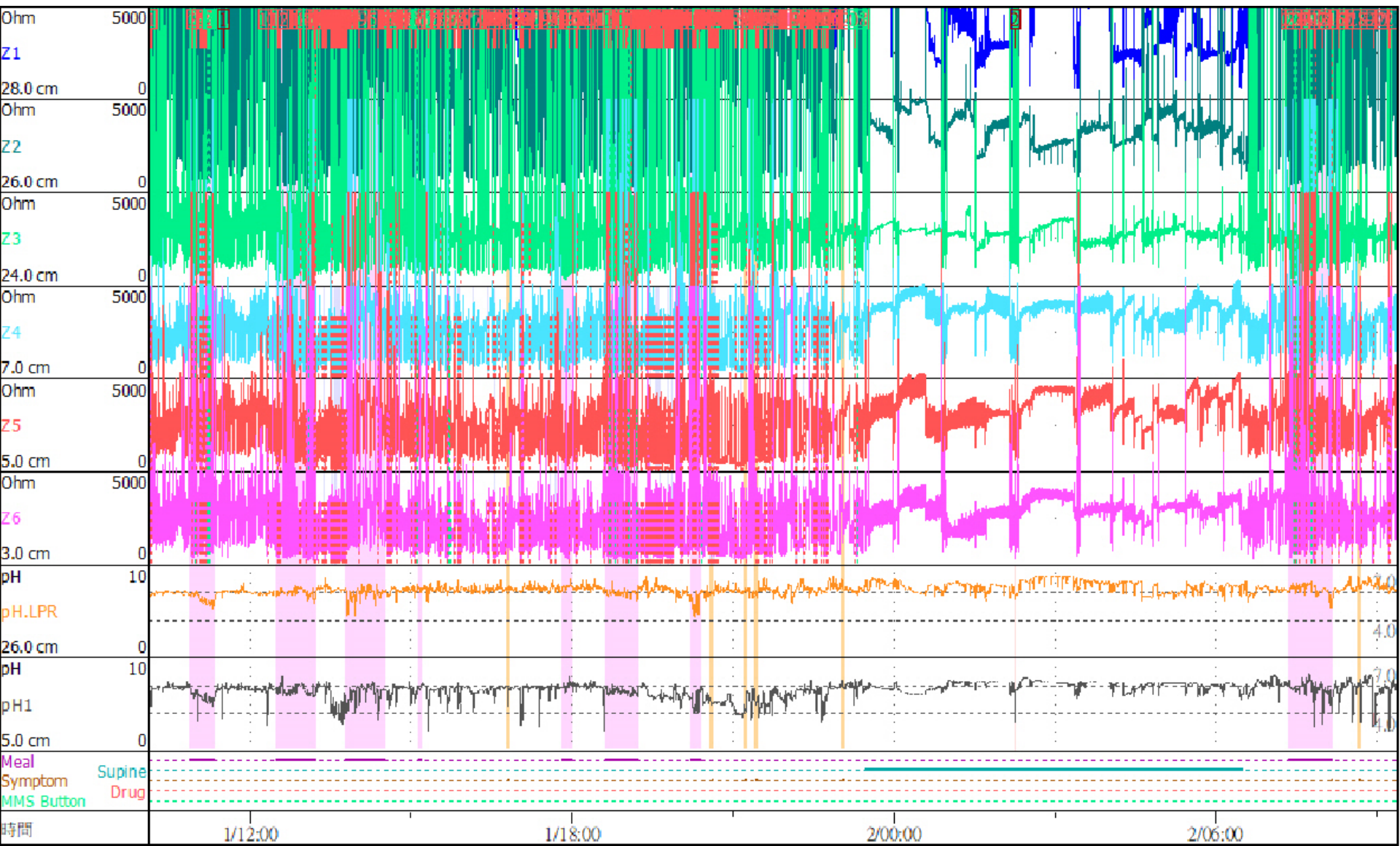
■ Heartburn

Are the symptoms resemble to the patient's previous complaints?

■ Yes

Conclusions:

■ **Positive**



Lyon consensus 2.0

	UNPROVEN GERD ENDOSCOPY, WIRELESS pH STUDY, 24 HOUR pH OR pH IMPEDANCE, HRM <i>off therapy</i>			PROVEN GERD ENDOSCOPY, 24 HOUR pH IMPEDANCE <i>on therapy</i>
	ENDOSCOPY	pH or pH-IMPEDANCE	HRM	ENDOSCOPY pH-IMPEDANCE
CONCLUSIVE EVIDENCE FOR PATHOLOGIC REFLUX	LA grades B, C&D esophagitis Biopsy proven Barrett's mucosa Peptic esophageal stricture	AET>6% on 24 hour studies AET>6% on ≥2 days on wireless studies		LA grades B, C&D esophagitis Peptic esophageal stricture AET>4%, reflux episodes>80
BORDERLINE OR INCONCLUSIVE EVIDENCE	LA grade A esophagitis	AET 4-6% on 24 hour studies AET 4-6% on ≥2 days on wireless studies Total reflux episodes 40-80/day		LA grade A esophagitis AET 1-4% Total reflux episodes 40-80/day MNBI 1500-2500 Ω
ADJUNCTIVE OR SUPPORTIVE EVIDENCE*	Hiatus hernia Histopathologic scoring systems Electron microscopy of biopsies	Reflux-symptom association Total reflux episodes >80/day MNBI<1500 Ω	Hypotensive EGJ Hiatus hernia IEM/absent contractility	Hiatus hernia MNBI <1500 Ω Reflux symptom association
EVIDENCE AGAINST PATHOLOGIC REFLUX		AET<4% each day of study** Total reflux episodes<40/day MNBI>2500 Ω		AET<1% Total reflux episodes <40/day MNBI>2500 Ω

Diagnosis

- Reflux Hypersensitivity (RH)

Treatment

- Imipramine
- Takepron

Patient report outcome

- Eckardt score
- RSI
- EHAS(A)
- EHAS((H)
- RDQ
- GERDyzer

Eckardt score

		2024/8/19	2024/11/14
1	體重減輕	0	0
2	吞嚥困難	0	0
3	胸口疼痛	0	0
4	逆流	0	0
	Total	0	0

Scores 0-1: stage 0, 2-3: stage I, 4-6: stage II, score > 6: stage III

The Reflux Symptom Index (RSI)

在過去一個月內，以下問題是否影響你？ (0-不會，5-重度)		2024/8/19	2024/11/14
1	沙啞或聲音的問題	0	0
2	清喉嚨	0	0
3	過多喉嚨黏液或鼻涕倒流	0	0
4	吞嚥食物，液體或藥丸困難	0	0
5	進食或躺下後咳嗽	0	0
6	呼吸困難或噎到事件	0	0
7	令人討厭或惱人的咳嗽	0	0
8	有東西黏在喉嚨或有塊狀物在喉嚨的感覺	0	0
9	心灼熱，胸痛，消化不良或胃酸跑上來	4	0
	Total	4	0

Score range: 0-45 (normal ≤ 13),
the higher the score, the more severe the symptom.

Reflux Disease Questionnaire (RDQ)

回想過去一個月， 您認為以下症狀出現時的如何？		2024/8/19		2024/11/14	
		程度	頻率	程度	頻率
程度：0-不會，5-重度					
頻率：0-不會，5-每天					
1	胸骨後方感到灼熱-----	0	0	0	0
2	胸骨後方感到疼痛-----	0	0	0	0
3	上腹中間感到灼熱-----	4	5	4	5
4	上腹中間感到疼痛-----	0	0	0	0
5	口腔內有酸味-----	1	0	0	0
6	有東西從胃部向上移動而感到不適	0	0	0	0
	Total	1		0	

Score range(Item1,2,5,6): 0-40 (normal <12)

The GERDyzer

過去7天來，生病(指逆流相關症狀)對您生活品質的影響。 (0-完全沒有；10-很嚴重)		2024/8/19	2024/11/14
1	整體來說，過去7天您覺得如何？	6.1	5.0
2	生病所帶來的痛苦/不適對您造成的影響有多大？	8.2	7.8
3	生病對您身體健康造成的影響有多大？	6.7	4.9
4	生病對您精神活力造成的影響有多大？	8.6	7.1
5	生病對您日常活動造成的干擾有多大？	8.4	7.0
6	生病對您休閒活動造成的干擾有多大？	8.5	5.6
7	生病對您社交生活造成的干擾有多大？	8.3	5.2
8	生病對您飲食習慣造成的干擾有多大？	8.2	4.9
9	生病對您心情造成的影響有多大？	8.8	7.4
10	生病對您睡眠造成的影響有多大？	5.2	6.2
	Total	53.1	41.8

Score range: 0-70,
the higher the score, the worse the QoL.

食道過度警覺及焦慮量表 (EHAS)

在過去一個月內，以下問題是否影響你？ (0-非常不同意，4-非常同意)		2024/8/19	2024/11/14
1	我似乎無法忘記我的症狀	1	4
2	我很難享受生活，因為我無法擺脫喉嚨/胸部/食道的不適	4	4
3	這些症狀很可怕，我覺得它們讓我不知所措	3	3
4	只要一醒來，我就會一整天擔心我的喉嚨/胸部/食道會感到不適	4	3
5	我經常會擔心喉嚨/胸部/食道的問題	4	3
6	這些症狀很可怕，我認為它們永遠不會改善	3	3
7	關於減輕症狀，我毫無辦法	4	3
8	當我喉嚨/胸部/食道不適時，我會感到害怕	4	3
9	我焦急地希望這些症狀消失	4	4
	Symptom-specific anxiety total score (1-9)	31	30
10	我很快就會注意到我的食道症狀的位置或範圍的變化	4	4
11	我會意識到我的食道有突然或暫時的變化	4	4
12	即使我忙於另一件事，我也會注意到我的症狀	3	2
13	我會專注於食道的感覺	3	2
14	我對心灼熱或胸痛等食道的感覺非常敏感	4	4
15	我會一直追蹤我症狀的程度	4	4
	Esophageal hypervigilance (10-15)	22	20

Follow-up

	2024/8/19	2024/11/14
用藥/治療	Imipramine Takepron	Imipramine
治療效果(0-100%)	20	80
主訴症狀VAS程度(0-10/10)	6	5
RSI總分 (0-45,<13)	4	0
RDQ總分 (0-40,<12)	1	0
GERDyzer總分 (0-70)	53.1	41.85
EHAS anxiety (0-36)	31	30
EHAS hypervigilance (0-36)	22	20
Eckardt總分 (0-12)	0	0

Reflux hypersensitivity

Diagnostic criteria

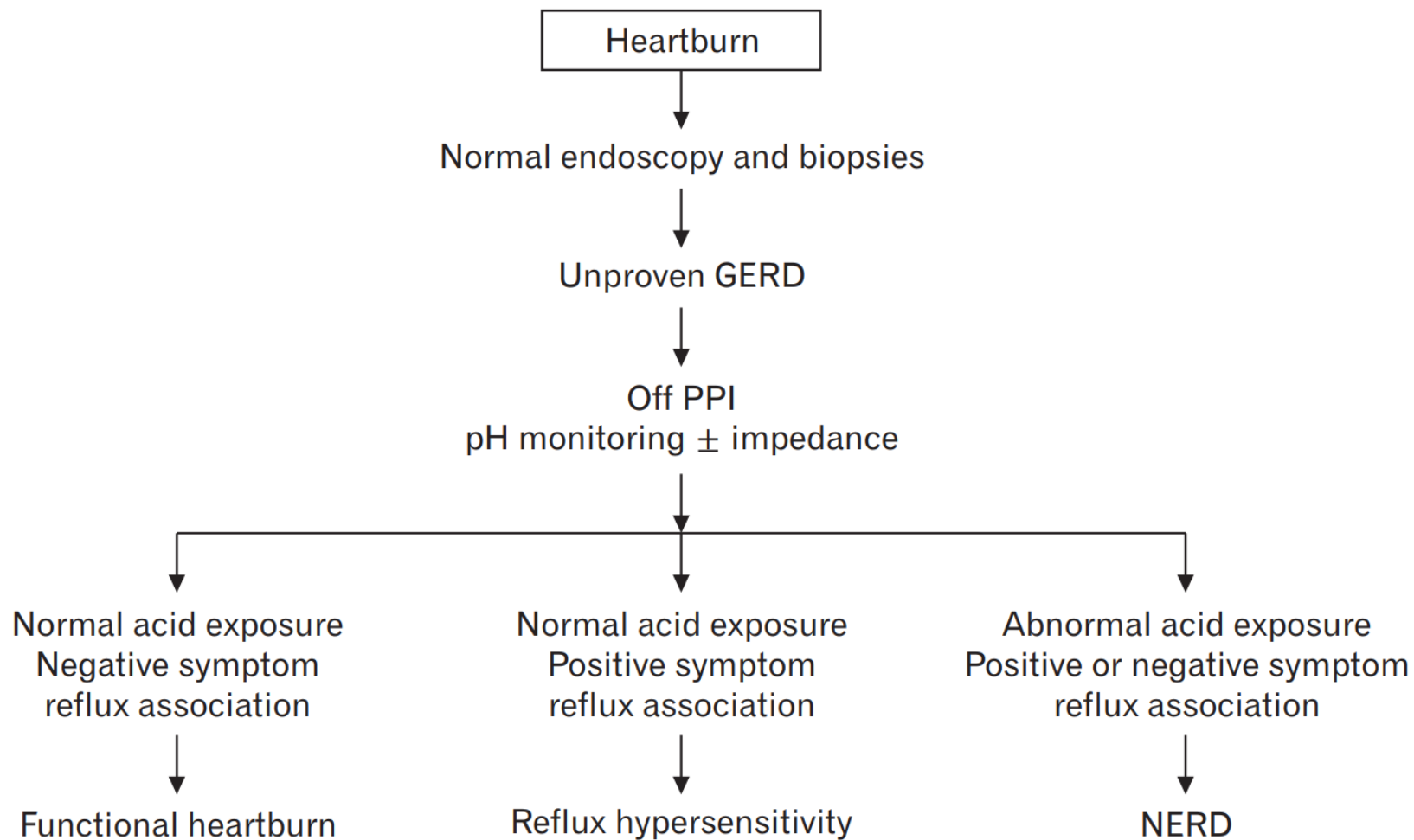
Table 2. Diagnostic Criteria for Reflux Hypersensitivity (Rome IV)

Must include all of the following:

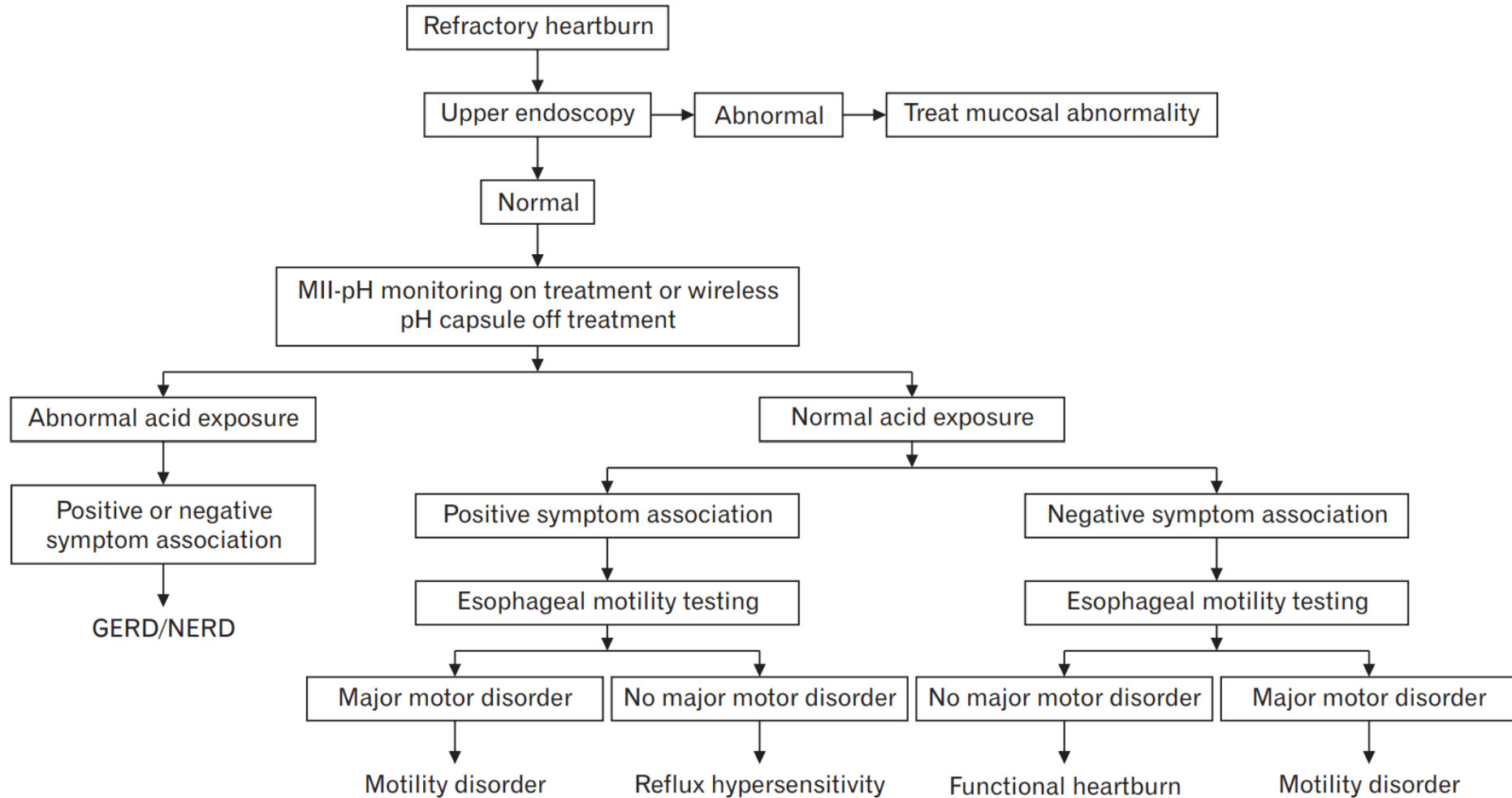
1. Retrosternal symptoms including heartburn and chest pain^a
2. Normal endoscopy and absence of evidence that eosinophilic esophagitis is the cause of the symptoms
3. Absence of major esophageal motor disorders^b
4. Evidence of triggering of symptoms by reflux events despite normal acid exposure on pH or pH-impedance monitoring^c

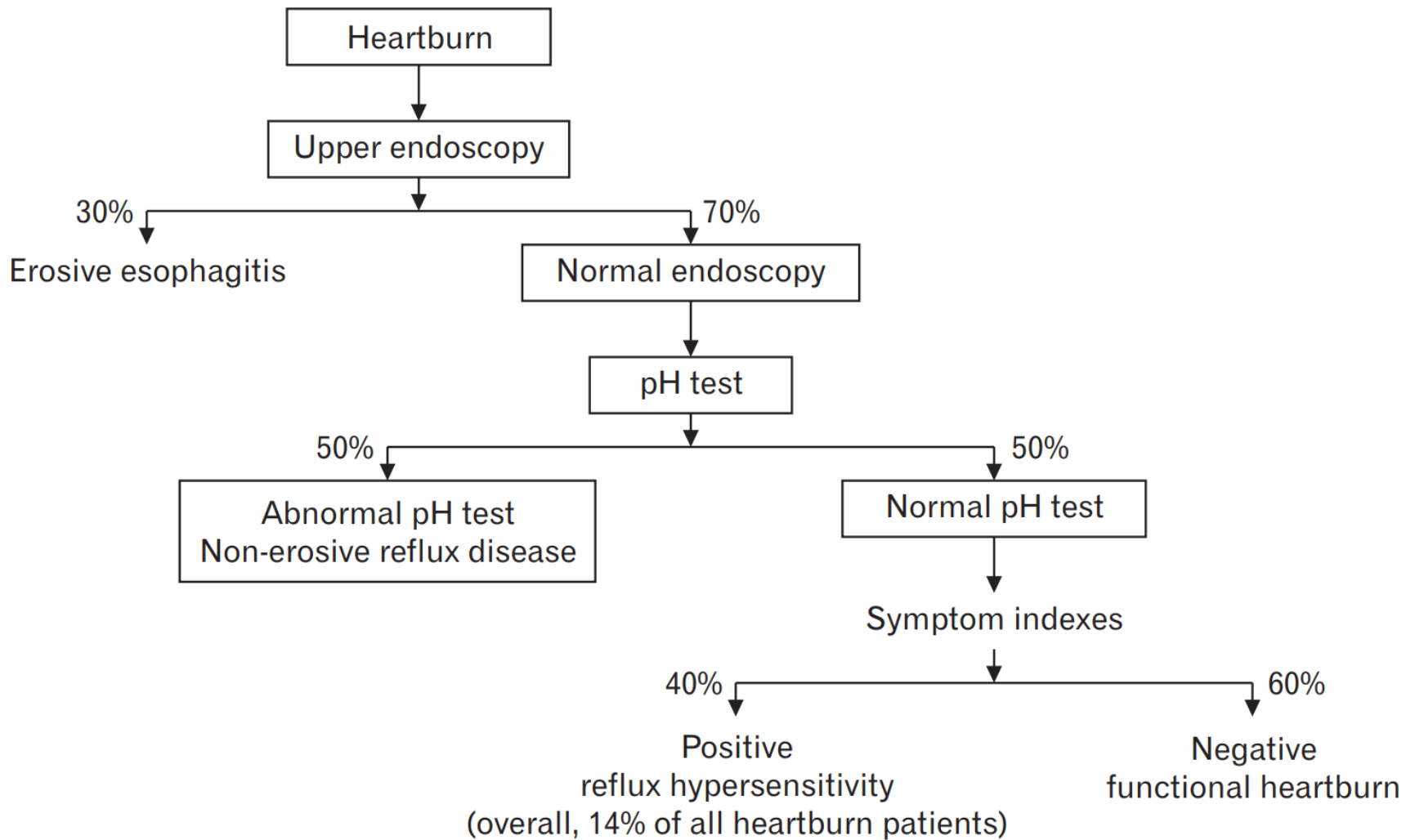
^aCriteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis with a frequency of at least twice a week.

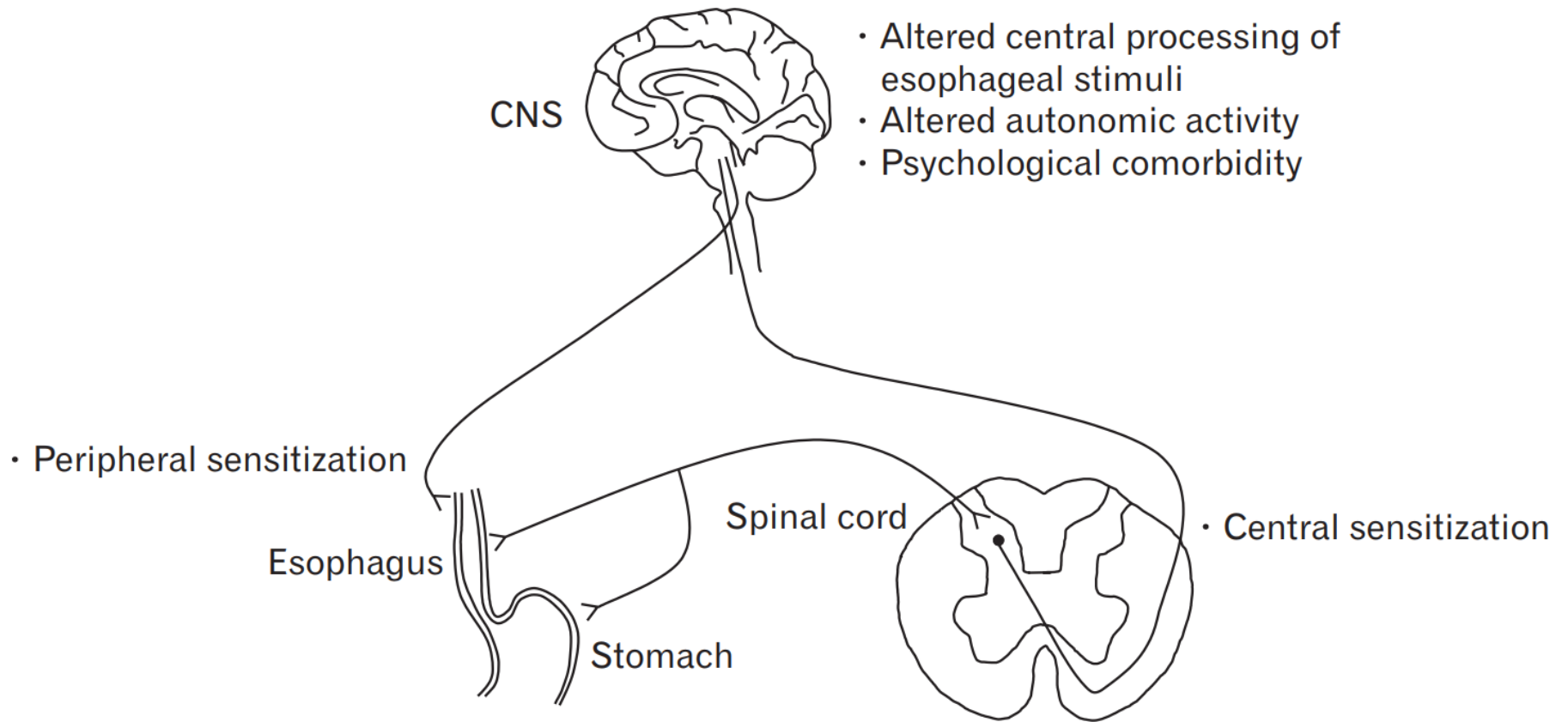
C Rome IV



Refractory heartburn







Treatment

- Anti-reflux therapeutic modalities have been considered as first line therapy
 - Medical
 - Histamine-2 receptor antagonists (H2RA)
 - PPI twice daily
 - Endoscopic
 - Surgical interventions
 - Laparoscopic Nissen fundoplication
 - consider it only in a small number of very carefully selected patients

Treatment

- The role of **diet & lifestyle modification** related to GERD in patients with reflux hypersensitivity
 - Remains **unknown**

Treatment

- **Neuromodulators**
 - Tricyclic anti-depressants (TCA)
 - Selective serotonin reuptake inhibitors (SSRIs)
 - Trazodone
 - Serotonin-norepinephrine reuptake inhibitors
 - lfaxine
 - Adenosine antagonists (theophylline), ondansetron, tegaserod, octreotide, gabapentin and pregabalin

討論

1. 強調客觀逆流測試對於評估症狀的重要性，單純依靠症狀判斷可能不足。
2. MIIpH 等檢測有助於釐清症狀，尤其在常規治療效果不佳時，對於評估治療效果和找出其他潛在原因具有重要價值。這類檢測雖然可能較昂貴或不便，但對於精準診斷和治療是必要的。
3. 單純使用 PPI 可能無法解決所有逆流問題，需要更全面的評估與治療策略。