

## Case conference

A 65 y/o man who vomit for 10 more times

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2012.11.26

## Basic data

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- **Hospital course:**
- **Age:** 65 year/old
- **Gender:** Male

## ER course

**Day1 10:54**

**Chief complaint:**

**Nausea and vomiting for 10+ times since last night**

GI OPD轉ER→ 腸胃炎脫水，來急診打點滴

GCS: E4V5M6

T/P/R: 36.2 / 95 / 16 BP: 114/68mmHg

**Triage: II**

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## Present illness

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- Abdominal pain(-), headache(-), stool passage(+), diarrhea(-), abdominal surgery history(-)
- **Past history and medication:**
  - (a) **Low back pain for 3 month**  
→ NS OPD f/u (台大·新光), 已作MRI  
→ taking pain killer
  - (b) **Legs edema for 1 month, decreased urine output recently**  
→ 醫生說藥物過敏(Lacoxa→edema and skin rash) · Taking Lasix

## PE

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- **Con's:** E4V5M6
- **Chest:** Bilateral clear breathing sounds; RHB,
- **Abdomen:** soft, non-tender, **hypoactive bowel sounds**
- **Extremity:** warm, **with lower leg pitting edema**

## Chard record

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- **Right side low back pain with radiation to lateral thigh for weeks**, received PT but s/s persisted
- Numbness (+), hyperesthesia, SLRT right 20 degree, right foot dorsiflexion 4+
- **Imp: Right L5 sciatica** → Arrange L-spine MRI
- **Bilateral leg pitting edema**  
→ Lasix 1# BID
- leg edema some improved, with right ankle residual edema  
→ Keep lasix 1# BID

BUN	18
Cr	1.1
Albumin	4.0
GOT	15
GPT	9

## What's your impression?



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## Impression

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### • Vomiting with dehydration, cause?

→ r/o ileus, r/o gastric outlet obstruction, r/o electrolyte imbalance (∴ 門診吃 Lasix for 腳腫)

### • Leg edema, cause?

### • Low back pain, cause?

## Work up

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### Day1 11:00

- Fluid supplement with N/S 100ml/hr
- Image: Plain abdomen
- Lab:
  - Hb/WBC/DC
  - BUN/Cr; Na/K; AST; lipase
- F/S (**118**)

## Lab

Hb	<b>11.3</b>	GOT	18		
WBC	<b>13300</b>	BUN	<b>31</b>		
Seg	<b>87.0</b>	Cr	<b>1.6</b>		
Lymph	8.0		<b>1.1(10/15)</b>		
		eGFR	43.6		
		Na	<b>122</b>	→	Blood Osmolarity <b>252</b>
		K	3.9		Urine Na <b>18</b>
		Lipase	44		Urine osmolality 471

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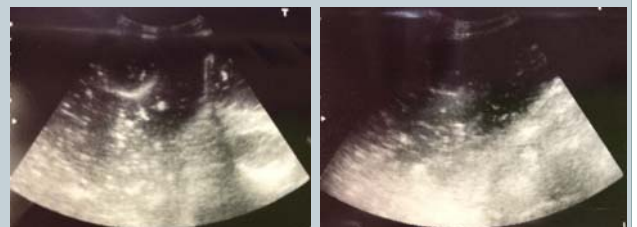


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## Bed side echo

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- Day1 15:30 nausea still noted



## Work up

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**Day1 15:30** nausea still noted

- Bed side echo
  - Distended stomach and duodenum with fluid
  - R/O obstructive ileus
  - R/O gastric outlet obstruction
  - **Arrange abdominal CT**; consider PES
  - On NG with decompression, NPO

**Day1 18:40** 轉EC

## Abdominal CT

**What's your impression and plan?**



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## Work up

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1. Distended stomach with collapse jejunum to colon
2. Retroperitoneal tumor, bilateral (right>left); bilateral hydronephrosis, para-aortic lymphadenopathy, origin?

**Impression:**

→ **Gastric outlet obstruction, R/O PUD stenosis, R/O retroperitoneal tumor related**

**Plan:**

- Consult 內科總值, GS, GU
- Symptomatic control (primperan 1amp IV Q8H)
- 內科總值 → Arrange **PES**
- **GU** → Collect UA; urine cytology

## Lab

Na	<b>122→123</b>
pH	<b>7.651</b>
PCO2	36.9
PaO2	17
HCO3	<b>40.7</b>
BE	20
SaO2	35%

Sediment	尿沉渣	
RBC	1-2	/HPF
WBC	1-2	/HPF
Epithelial cell	0-1	/HPF
Cast	Not Found	/LPF
.cast-amount	-	
Crystal	Not Found	/HPF
.Cry-amount	-	
Bacteria	+	
Others	Not Found	

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## Endoscopic Findings

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**Day2 11:00**

- Esophagus : **Ulcer**, lower esophagus, middle esophagus
- Stomach : **Gastritis**, antrum
- Add PPI and sucralfate; N/V may be due to hyponatremia

## Work up

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**Day2 13:00**

- No specific discomfort, no N/V, no abdominal fullness, 有解小便但是解比較久
- **PE showed soft abdomen without tenderness**
- Keep PPI
- On liquid diet
- Follow up renal function and Na
- Consider Foley insertion and arrange nephro admission if persistent impaired renal function.

BUN	<b>31</b>
Cr	<b>1.6→1.4</b>
eGFR	50.86
Na	<b>123→126</b>

## Work up

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### Day3 10:00

- Stable condition, consider discharge
- Keep sodium supply and PPI
- Follow up Na

### Day3 16:00

Na 123→126→129

- Tolerate with oral intake, No N/V
- Education and arrange GU/GI OPD follow-up
- MBD

## Story goes on!!!



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## ER course

### Day4 06:27

#### Chief complaint:

回家後人時地皆分不清 (在ER都沒怎麼睡)

GCS: E4V5M6

T/P/R: 35.4 / 138 / 18 BP: 122/72mmHg

Triage: I

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## PE

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- **Con's:** E4V5M6 (disoriented to 人時地)
- **Head and neck:** Pupil: 3/3
- **Chest:** Bilateral clear breathing sounds; RHB,
- **Abdomen:** soft, non-tender
- **Extremity:** warm

## Work up

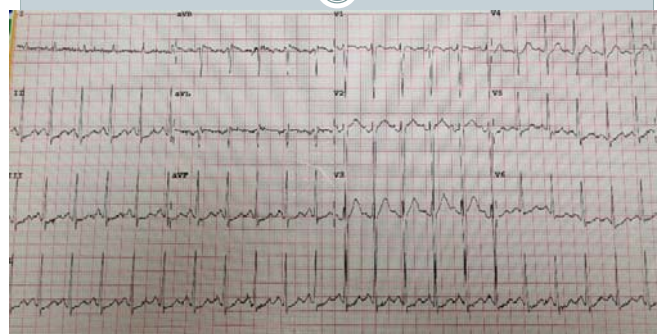
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### Day4 06:35

- Fluid supplement with N/S 300ml ST and 60ml/hr
- Image: Head CT/ CXR/ Bed side echo
- EKG
- Lab:
  - CBC/DC
  - BUN/Cr; AST; iCa; Troponin I; Ammonia
  - VBG6
- F/S (**128**)

## EKG

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## Image

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- **Head CT:**  
→ Impression: No ICH or other intracranial lesion except cortical atrophy.
- **Bed side echo:**  
→ 1. Distended stomach; 2. collapse IVC

## Lab

Hb	12.0	GOT	20	Na	122 → 129 → 127
WBC	20800	BUN	54	K	3.2
Seg	89.5	Cr	1.1 → 2.2	pH	7.539
Lymph	1.5	eGFR	30.19	PCO2	40.5
Band	4.5	iCa	4.64	PaO2	39
		Tropo I	0.049	HCO3	34.5
		Ammonia	43	BE	12
				SaO2	79%

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## Day3 9:20 Admitted to GU ward



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## Hospital course

(Day4 15:40) left PCN was performed  
 (Day4) Delirium state was noted and seroquel was given  
 (Day5 14:25) Deep coma and cardiac arrest was noted, CPR performed, intubated and bosmin given. Massive brownish vomitus about 1600ml was noted.  
**Favored choking**  
 (Day5 14:45) ROSC and high dose levophed use.  
 → Transfer to ICU.  
 (Day5 15:50) Cardiac arrest again.  
 (Day5 16:46) Patient expired.

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## Final Diagnosis

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- Acute respiratory failure with cardiac arrest s/p resuscitation
- Right renal pelvis urothelial carcinoma with massive LN metastasis under clinical and image diagnosis
- Left hydronephrosis, cause?
- Acute renal insufficiency
- Suspected gastric outlet obstruction, but negative panendoscopic finding
- Delirium

## Discussion

### How to approach patient with Nausea and Vomiting

*Tintinalli Emergency Medicine 7<sup>th</sup> edition*

KEITH SCORZA, MD, AARON WILLIAMS, DO, J. DANIEL PHILLIPS, MD, and JOEL SHAW, MD  
Dewitt Army Community Hospital Family Medicine Residency, Fort Belvoir, Virginia  
Am Fam Physician. 2007 Jul 1;76(1):76-84.



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## Introduction

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- A comprehensive **history and physical examination** can often reveal the cause of nausea and vomiting, making further evaluation unnecessary.
- The etiologies of nausea and vomiting include **iatrogenic, toxic, or infectious causes; gastrointestinal disorders; and central nervous system or psychiatric conditions.**

TABLE 1  
Differential Diagnosis of Nausea and Vomiting

#### Central nervous system

Closed head injury <sup>1</sup>

Increased intracranial pressure

Cerebrovascular accident (infarction/hemorrhage)

Hydrocephalus

Mass lesion

Meningitis/encephalitis/abscess

Pseudotumor cerebri

Migraine

Seizure disorders<sup>2</sup>

Vestibular

Labyrinthitis

Ménière's disease

Motion sickness

Any condition that **increases intracranial pressure** (e.g., mass, infarct, infection) can result in vomiting with or without nausea.  
→ **Present with additional neurologic signs**

→ Conditions that affect the labyrinthus associated with **vertigo**.

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#### Gastrointestinal

Functional disorders

Chronic intestinal pseudo-obstruction

Gastroparesis

Irritable bowel syndrome

Nonulcer dyspepsia

★ Obstruction

Adhesions

Esophageal disorders/achalasia

Intussusception

Malignancy

Pyloric stenosis

Strangulated hernia

Volvulus

Organic disorders

Appendicitis

Cholecystitis/cholangitis

Hepatitis

Inflammatory bowel disease

Mesenteric ischemia

Pancreatitis

Peptic ulcer disease

Peritonitis

**Acute symptoms** are typically the result of an **inflammatory process**

→ **Gastric outlet obstructions** tend to cause **intermittent symptoms**

→ **intestinal obstructions** typically cause **acute symptoms and severe pain**.

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#### Infectious

Acute otitis media

★ Bacteria

Bacterial toxins

Food-borne toxins

Pneumonia<sup>2</sup>

Spontaneous bacterial peritonitis

Urinary tract infection/pyelonephritis

★ Viruses

Adenovirus

Norwalk

Rotavirus

**Infectious and toxic** causes of nausea and vomiting are usually **self-limiting**.

#### ★ Medications/Toxins

Medications

Antiarrhythmics

Antibiotics

Anticonvulsants

Chemotherapeutics

Digoxin

Ethanol overdose

Hormonal preparations

Illicit substances

Nonsteroidal anti-inflammatory drugs

Opiates

Overdoses/withdrawal<sup>2</sup>

Radiation therapy

Toxins

Arsenic <sup>2</sup>

Organophosphates/pesticides<sup>2</sup>

Ricin<sup>2</sup>

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#### Metabolic

Adrenal disorders

Diabetic ketoacidosis

Paraneoplastic syndromes

Parathyroid disorders

★ Pregnancy

Thyroid disorders

Uremia

#### Miscellaneous

Acute glaucoma<sup>2</sup>

Acute myocardial infarction

Nephrolithiasis<sup>12</sup>

Pain

Psychiatric disorders

Anorexia nervosa

Anxiety

Bulimia nervosa

Conversion disorder

Depression

Psychogenic/emotional

→ **Pregnancy** is the most common endocrinologic cause of nausea and vomiting and **must be considered in any woman of childbearing age**.

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## History taking

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- Identify the **onset and duration** of the symptoms. (Chronic symptoms are defined as >1 month)
- Frequency and timing.**
- The **content of the vomitus** may be helpful to determine if an obstruction is present and its location.
- Review medications**
- Associated symptoms:**
  - Abdominal pain?
  - **Always ask about prior abdominal surgeries**
  - Fever? Diarrhea? → Contact?
  - CNS sign? (headache, visual changes, vertigo, or neurologic deficits)

TABLE 2

### Possible Diagnoses Based on the History in Patients with Nausea and Vomiting

History	Possible diagnoses
<b>Onset of symptoms</b>	
Abrupt	Cholecystitis, food poisoning, gastroenteritis, illicit drugs, medications, pancreatitis
Insidious	Gastroesophageal reflux disease, gastroparesis, medications, metabolic disorders, pregnancy
<b>Timing of symptoms</b>	
Before breakfast	Ethyl alcohol, increased intracranial pressure, pregnancy, uremia
During or directly after eating	Psychiatric causes Less likely: peptic ulcer disease or pyloric stenosis
One to four hours after a meal	Gastric outlet obstructions (e.g., from peptic ulcer disease, neoplasms), gastroparesis
Continuous	Conversion disorder, depression
Irregular	Major depression

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#### Nature of vomited matter

Undigested food	Achalasia, esophageal disorders (e.g., diverticulum, strictures)
Partially digested food	Gastric outlet obstruction, gastroparesis
Bile	Proximal small bowel obstruction
Feculent or odorous	Fistula, obstruction with bacterial degradation of contents
Large volume (> 1,500 mL per 24 hours)	Suggests organic rather than psychiatric causes

#### Abdominal pain

Right upper quadrant	Biliary tract disease, cholecystitis
Epigastric	Pancreatic disease, peptic ulcer disease
Severe pain	Biliary disease, pancreatic disease, peritoneal irritation, small bowel obstruction
Severe pain that precedes vomiting	Small bowel obstruction

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#### Associated symptoms/findings

Weight loss	Malignancy (significant weight loss may also occur secondary to sitophobia in gastric outlet obstructions and peptic ulcer disease)
Diarrhea, myalgias, malaise, headache, contact with ill persons	Viral etiologies
Headache, stiff neck, vertigo, focal neurologic deficits	Central neurologic causes (e.g., encephalitis/meningitis, head injury, mass lesion or other cause of increased intracranial pressure, migraine)
Early satiety, postprandial bloating, abdominal discomfort	Gastroparesis
Repetitive migraine headaches or symptoms of irritable bowel syndrome	Cyclic vomiting syndrome

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## PE

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The physical examination should focus on **determining whether a critical, life-threatening condition exists.**

Table 75-3 Differential Diagnosis Based on Physical Examination Findings

Physical Examination	Abnormal Signs or Symptoms	Some Diagnostic Considerations
General	Toxic appearing	Dehydration
	Generalized weakness	Chronic malnutrition
	Weight loss	Malignancy
Vital signs	Fever	Infection (gastroenteritis, appendicitis, cholecystitis)
	Tachycardia	
	Hypotension	Bowel perforation second peritonitis
	Hypertension	Severe volume depletion
		Intracranial hemorrhage or stroke

Head, eyes, ears, nose, throat	Nystagmus	Peripheral vs. central causes (benign positional vertigo, cerebellar infarct)
	Exophthalmos	
	Pin-point pupils	Thyroid disorders (Graves disease)
	Fixed-dilated pupil, eye pain	Opiate abuse Acute glaucoma
	Dry mucous membranes	Dehydration Bulimia
	Poor dental enamel	
	Parotid gland enlargement	
	Lymphadenopathy	
Abdomen	Distention	Small bowel obstruction, gastroparesis, gastric outlet obstruction, ileus
	↓ bowel sounds	
	Surgical scars	Ileus
	Hernias or palpable masses	Incarcerated hernia, tumors
	Abdominal rigidity	Peritonitis

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Neurologic	Mental status	Dehydration, intracranial lesion or pathology, brainstem tumor, elevated intracranial pressure
	Cranial nerve findings or neurologic deficits	
	Papilledema	
Extremities	Scarring on dorsal surface of the hands	Bulimia
Skin	Jaundice	Hepatobiliary disease (hepatitis, cholelithiasis)
	Poor skin turgor	
	Hyperpigmentation	Dehydration
	Decreased elasticity	Addison disease
	Track marks	Scleroderma
		Drug abuse/withdrawal

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## Tips

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- The *American Gastroenterological Association* suggests a three-step approach to the initial evaluation of nausea and vomiting.
- **Attempt to recognize and correct any consequences of the symptoms**, such as dehydration or electrolyte abnormalities.
- Try to **identify the underlying cause and provide specific therapies**.
- If no etiology can be determined, **use empiric therapy to treat symptoms**.

## Diagnostic testing

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TABLE 3  
Diagnostic Tests and Clinical Suspicion for Patients with Nausea and Vomiting

Test	Clinical suspicion
<b>Laboratory tests</b>	
Complete blood count	Leukocytosis in an inflammatory process, microcytic anemia from a mucosal process
Electrolytes	Consequences of nausea and vomiting (e.g., acidosis, alkalosis, azotemia, hypokalemia)
Erythrocyte sedimentation rate	Inflammatory process
Pancreatic/liver enzymes	For patients with upper abdominal pain or jaundice
Pregnancy test	For any female of childbearing age
Protein/albumin	Chronic organic illness or malnutrition
Specific toxins	Ingestion or use of potentially toxic medications
Thyroid-stimulating hormone	For patients with signs of thyroid toxicity or unexplained nausea and vomiting
<b>Radiographic testing</b>	
Supine and upright abdominal radiography	Mechanical obstruction

### Further testing

Esophagogastroduodenoscopy	Mucosal lesions (ulcers), proximal mechanical obstruction
Upper gastrointestinal radiography with barium contrast media	Mucosal lesions and higher-grade obstructions; evaluates for proximal lesions
Small bowel follow-through	Mucosal lesions and higher-grade obstructions; evaluates the small bowel to the terminal ileum
Enteroclysis	Small mucosal lesions, small bowel obstructions, small bowel cancer
Computed tomography with oral and intravenous contrast media	Obstruction, optimal technique to localize other abdominal pathology
Gastric emptying scintigraphy	Gastroparesis (suggestive)
Cutaneous electrogastrigraphy	Gastric dysrhythmias
Antroduodenal manometry	Primary or diffuse motor disorders
Abdominal ultrasonography	Right upper quadrant pain associated with gallbladder, hepatic, or pancreatic dysfunction
Magnetic resonance imaging of the brain	Intracranial mass or lesion

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## Treatment

Situation	Associated neurotransmitters	Recommended antiemetic
Migraine headache	Dopamine (probably a primary mediator)	For headache and nausea: metoclopramide (reglan) or prochlorperazine (compazine) For nausea: oral antiemetics, metoclopramide, prochlorperazine, serotonin antagonists
Vestibular nausea	Histamine, acetylcholine	Antihistamines and anticholinergics (equally effective)
Pregnancy-induced nausea	Unknown	For nausea: ginger, vitamin B6 For hyperemesis gravidarum: promethazine (phenegan, first-line agent); serotonin antagonists and corticosteroids (second-line agents)
Gastroenteritis	Dopamine, serotonin	First-line agents: dopamine antagonists Second-line agents: serotonin antagonists Use in children is controversial
Postoperative nausea and vomiting	Dopamine, serotonin	Prevention: serotonin antagonists, droperidol (inapsine), dexamethasone Treatment: dopamine antagonists, serotonin antagonists, dexamethasone



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