CASE 6

24 YEAR OLD MALE WITH ABDOMINAL PAIN

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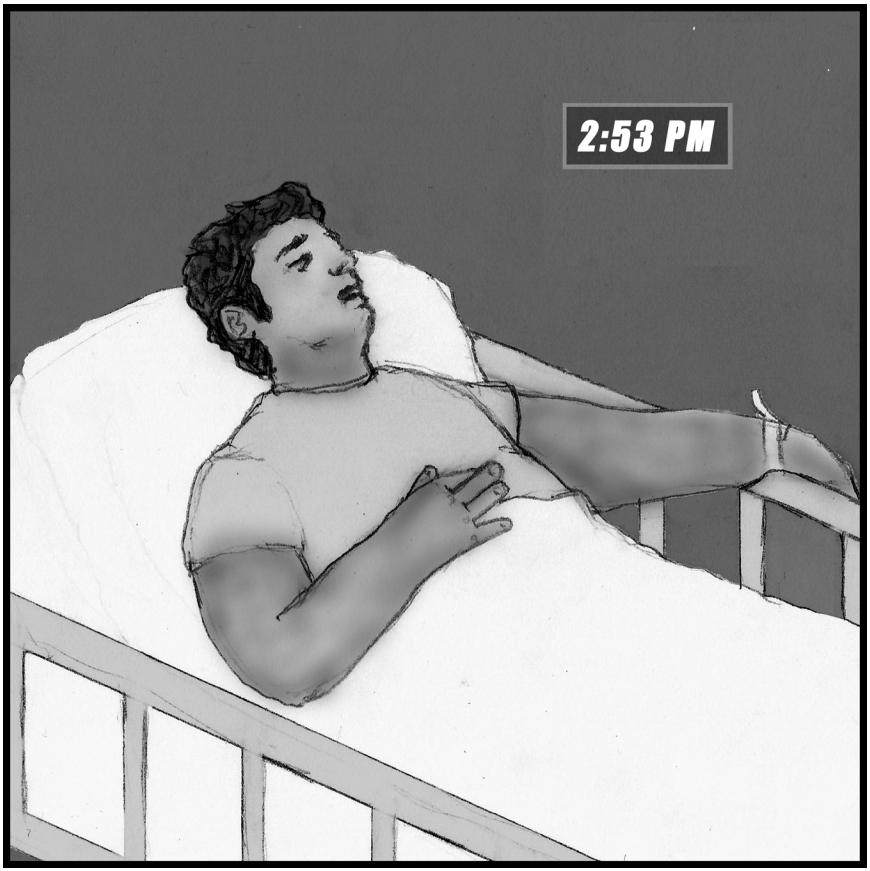
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CASE 6

24 YEAR OLD MALE WITH ABDOMINAL PAIN

—Initial Visit*—

*Authors' Note: The history, exam and notes are the actual documentation of the physicians and providers, including abbreviations (and spelling errors)

CHIEF COMPLAINT (at 14:23): Abdominal pain

VITAL SIGNS

Time	Temp(F)	Rt.	Pulse	Resp	Syst	Diast	Pos.	Pain scale
14:53	97.8	Tym.	102	18	145	90	S	6
15:51			76	20	145	86	S	0

HISTORY OF PRESENT ILLNESS (at 15:08): 24 y/o male c/o abdominal pain and n/v/d x 1 day. States he had a temperature yesterday and began to have stomach upset. States he began throwing up this am x 5 and admits to diarrhea today. States pain is in the top part of his abdomen. Denies bloody urine or stool. States he has not been able to keep any liquids down today. Denies radiation of pain. Rates pain 6/10. Denies fever, chest pain, SOB, cough, rhinorrhea, dysuria or hematuria.

PAST MEDICAL HISTORY/TRIAGE:

Chief complaint/quote: (Per triage nurse): Pt. states he have severe lower abd. pressure pain vomiting also lower back pain. Complains of nausea, vomiting, diarrhea and flank pain. Pt c/o difficulty urinating. No private physician.

Allergies: No known allergies.

Medications: The patient is not taking medications at this time.

Past medical history: No significant medical history. No significant surgical history.

EXAM (at 15:26)

General: Alert and oriented X3, obese, well appearing, in no apparent distress

Head: Normocephalic; atraumatic.

Eyes: PERRL

Nose: The nose is normal in appearance without rhinorrhea

Resp: Normal chest excursion with respiration; breath sounds clear and equal bilaterally; no wheezes, rhonchi, or rales

Card: Regular rhythm, without murmurs

Abd: Non-distended; tender over RUQ, Epigastrium and LUQ, soft, without rigidity, rebound or guarding

Skin: Normal for age and race; warm and dry; no apparent lesions

ORDERS (at 15:40): Demerol 25mg IVP, Pheneran 12.5mg IVP, .9NS 1 L bolus

PROGRESS NOTES (at 16:22) When the patient was ready to leave, he mentioned that the last time he had a stool, he saw some blood in it. I ordered levaquin 500mg X 1 in the ED and prescribed levaquin 500mg QD for 3 days in case this was bacterial in origin as there is good data to support a decrease in duration of symptoms with quinolone therapy. Patient is feeling better.

DIAGNOSIS: 1. Gastroenteritis, 2. Vomiting - and nausea

DISPOSITION (at 17:03): The patient was discharged to Home ambulatory. Given name and number of PCP for follow up if not improved in 3-4 days. Prescriptions for Phenergan 25mg PO and suppositories. After care instructions for nausea, vomiting and diarrhea.

Gregory L. Henry comments:

"The principal test with abdominal pain is the test of time"

Generalized abdominal pain is one of the most common complaints in the emergency department, and requires a unified approach. Most importantly, the principal test with abdominal pain is the test of time; in short order, a patient usually gets better or worse. My discussion, as with all cases I have commented upon, was done without looking at the final presentation, but some important points need to be made.

The history documented is adequate. We know that the patient has been ill for the past day, with both vomiting and diarrhea, but documentation of hematemesis was not included. The patient does comment that he cannot keep down fluids, and the denial of fever or urinary symptoms is also useful to note.

The patient is adequately evaluated. Standard examination of head, ears, eye, nose, throat, heart, and lungs was accomplished. The abdominal examination does not comment on the presence or absence of bowel sounds, but this is a minor issue; there has not been a paper published in which bowel sounds have been used to decide if a patient has a surgical abdomen. One area of criticism is that a rectal exam might have been worthwhile, to check for heme positive stool.

A decision is made in this case to use Levaquin for the diarrhea, assuming a bacterial cause. Evidence does not suggest that Levaquin or any other antibiotic is useful in a patient with a viral irritation of the bowels. It is hard to understand why an antibiotic was used.

The administration of pain medication for abdominal pain prior to diagnosis used to be considered an anathema. We now know that pain relief has essentially no adverse effect on diagnosis. I am

personally not a Demerol fan and have stopped using it, but the suppression of the patient's pain was appropriate and in no way affected the outcome of this case.

The diagnosis and disposition need some comment. Gastroenteritis is a disease entity that should not be used as a "diagnosis" in emergency medicine. Vomiting and diarrhea are both symptoms, which are acceptable "impressions" to use in emergency medicine cases. Gastroenteritis is a term found on the charts of more malpractice cases than any other diagnosis in emergency medicine—it is the refuge of the intellectually destitute. It is perfectly fine to reassure the patient that the exact etiology is not known, but that careful follow up will be done.

The principal concern here is the follow up time. Most abdominal pains and diarrhea should resolve quickly. A follow-up time of 3–4 days in a patient with abdominal pain is simply too long —a more reasonable time frame would be to see the patient back the next morning to see how he is progressing. The exact nature of the patient's problem is not clear, which is perfectly acceptable in emergency medicine—we must get used to dealing with some degree of uncertainty. Almost half the patients who present to the emergency department with abdominal pain do not have a specific diagnosis at the time of discharge. This is not only acceptable, but also quite appropriate. Most problems resolve themselves; the follow up interval is the key issue.

- Thoroughness of Documentation: 8 out of 10.
- Thoroughness of Patient Evaluation: 7 out of 10.
- Risk of Serious Illness Being Missed: Low risk.
- Risk Management Legal Rating: Medium risk.

24 YEAR OLD MALE WITH ABDOMINAL PAIN

—Second Visit: Early Next Morning (About 8 Hours Later)—

CHIEF COMPLAINT (at 00:38): Vomiting

VITAL SIGNS

Time	Temp(F)	Rt.	Pulse	Resp	Syst	Diast	Pos
00:42	95.2	Tym.	80	28	100	60	S

HISTORY OF PRESENT ILLNESS (at 00:46): 24 yo WM returns to the ED with c/o vomiting and mid-epigastric abdominal pain. Patient reports that he has had persistant vomiting for a couple of days with fever yesterday. Now with continuous vomiting and bloody stool. No fever today. No fevers/cough per patient. No ear ache/sore throat per patient. No fever, chills, hematemesis, chest pain, cough, sore throat.

PAST MEDICAL HISTORY/TRIAGE (per triage nurse):

Patient arrived by stretcher via EMS transport from Home. Complains of abdominal pain. Pain Index: 10; frowning, moaning, and holding a painful area. There is a severe stabbing pain located in the epigastric area. Pain became more severe around 22:00.

Medication, common allergies: No known allergies.

Current meds: Phenergan

Past medical/surgical history: No significant medical history. No significant surgical history.

EXAM (at 00:48)

General: Alert WM who appears uncomfortable and c/o nausea with vomiting

Head: Normocephalic; atraumatic.

Eyes: PERRL

Nose: The nose is normal in appearance without rhinorrhea

Oropharynx: Dry mucous membranes

Resp: Normal chest excursion with respiration; breath sounds clear and equal bilaterally; no wheezes, rhonchi, or rales

Card: Regular rhythm, without murmurs, rub or gallop

Abd: Non-distended; + tenderness to palpation mid-epigastrium, soft, without rigidity, rebound or guarding

Ext: 2+ radial pulses bilaterally; no peripheral edema

Skin: Normal for age and race; warm and dry; no apparent lesions

ORDERS (at 00:47): Dilaudid 1mg IVP, Phenergan 12.5mg IVP, .9NS-500cc bolus then to 125cc/hour

ED COURSE: (Per RN): At 01:00 IV was changed to warmed fluids for bolus administration. The patient was given a warm blanket. The patient was repositioned to a position of comfort. At approx. 01:05 patient brother came to ask what med the patient was given, stating, "I don't think he's breathing." I was outside patient room and immediately went into room. Pt was cyanotic in face, took an agonal breath, no pulse palpated carotid. Code blue called and patient moved to trauma room for resuscitation.

PROGRESS NOTES per MD: Patient was noted to be apneic and pulseless in the room. A "code blue" was called at approx 01:09 throughout the hospital and the patient was immediately moved to a trauma room. The patient was immediately intubated and chest compressions were begun while being attached to the monitor. Patient was found to be initially in v-fib and was shocked at 200J. Patient then went into PEA. A Right femoral triple lumen CVP was placed by a second ED physician who had come in to assist. The patient continued to alternate between v-fib and PEA. The patient was given narcan, glucose, bicarb x2, calcium chloride, magnesium, and several rounds of epinephrine and atropine per the med sheet. Chest compressions and bagged respirations were continued throughout the code except during the defibrillatory shocks. The patient's wife was initially in the room when the patient became apneic and pulseless. The patient's wife was escorted immediately into a family consultation room by staff. I asked the patient's family if they would like to be present in the room and the patient's wife and brother accompanied me back into the trauma room. The code continued as per the med sheet with family present. The patient was coded for an hour without return of a pulse despite multiple medications and shocks. The code was ended with agreement by staff at 02:09. The patient's brother was in the room at the time.

RESULTS:

Test	Flag	Value	Units	Ref. Range
NA		135	MMOL/L	135-144
K	H	5.8	MMOL/L	3.5-5.1
CL	H	108	MMOL/L	98-107
CO2	C	5	MMOL/L	22-29
BUN		15	MG/DL	7-18
CREAT	H	2.5	MG/DL	0.6-1.3
ALB	L	1.9	G/DL	3.2-4.6

Test	Flag	Value	Units	Ref. Range
TP	L	4.7	GM/DL	6.4-8.2
BILT		.5	MG/DL	0-1.0
BILD		0.2	MG/DL	0.0-0.3
BILI		.3	MG/DL	.0-1.0
ALT	H	105	U/L	22-65
ALP		81	U/L	42-144
AST	H	56	U/L	10-34

(continued on next page)

Test	Flag	Value	Units	Ref. Range
AMY	L	20	U/L	25-115
LIP		159	U/L	114-286
GLUC	C	548	MG/DL	70-110
ACET		NEGATIVE		NEGATIVE

Test	Flag	Value	Units	Ref. Range
pH	C	6.956		7.350-7.450
PCO2	L	24.7	MMHG	32.0-48.0
PO2	H	128.0	MMHG	83.0-108.0
HCO3	L	5.2	MMOL/L	21.0-28.0
FI O2		100.00		
O2 SAT		95.8	%	95.0-99.0

DISPOSITION: The patient was pronounced by the Emergency Department physician at 02:09.

FINAL DIAGNOSIS (by autopsy): Infarction of small bowel, mesenteric vein thrombosis, multiple other sites of thrombi including several small PE's

Additional comments by Gregory L. Henry:

Having seen the final diagnosis on this case, I believe nothing could have been done on the first visit to come up with this diagnosis. This is less than a one in a million kind of case and no emergency physician could have been expected to make such a diagnosis on the first visit.

The follow up time interval is the critical question, and recommending re-evaluation in 12 hours may have been preferable, but the patient returned before this time. It is inappropriate and unrealistic for anyone to believe that the average, competent emergency physician is going to make a diagnosis of infarction of the small bowel and mesenteric vein thrombosis on a 24 year old.

EVALUATION AND DIAGNOSIS OF ABDOMINAL PAIN IN ADULTS

Stephen A. Colucciello, MD, FACEP

I. INTRODUCTION

Abdominal pain is one of the most common complaints seen in the Emergency Department, and accounts for almost 10% of visits.[1] The spectrum of disease ranges from life-threatening to benign. Pain may be secondary to either intra-abdominal or extra-abdominal pathology. It is more important for the emergency physician to exclude "badness," in particular acute surgical disease, than to make an accurate diagnosis. However, this task is not always accomplished in one ED visit.

II. HISTORY

The history should target high risk conditions, including older age, pain that migrates to the right lower quadrant, and severe or progressive pain. In addition, women of childbearing potential (ectopic pregnancy), and the immunosuppressed (intra-abdominal infections) are at higher risk of serious disease. In the present case, our patient had no high-risk factors, with the possible exception of rectal bleeding. While ischemic bowel, peptic ulcer disease, Meckel's diverticulum, aorto-enteric fistula, diverticulitis, and other serious conditions can cause abdominal pain and rectal bleeding, most rectal bleeding in a young person is due to either hemorrhoids or simple enteritis.

Past medical history may be revealing. Asking if the patient has ever had a similar (or better yet, identical) attack in the past is useful; peptic ulcer disease, biliary colic, pancreatitis, and inflammatory bowel disease are notoriously recurrent. Prior surgeries are associated with a higher likelihood of obstruction, while vascular disease and arrhythmias predispose to ischemic bowel. Once again, our patient did not report any significant past medical history.

III. PHYSICAL EXAMINATION

Extremes of vital signs can alert the physician to serious disease, but many patients with abdominal pain will have normal or near-normal parameters. While fever piques the interest of a surgical consultant, patients with surgical disease are often afebrile, while those with medical illness may have high fever. At our patient's initial visit, the only significant abnormality was mild tachycardia, with a heart rate of 102, which had resolved on recheck.

With abdominal pain, the physical examination drives much of the ED evaluation. From the doorway, determine how uncomfortable the patient is. Is the patient writhing in pain, as occurs in colic, or curled up in a ball, as occurs with peritoneal pain? Our patient had 6 out of 10 pain but appeared "in no acute distress." Abdominal distention should alert the physician to the possibility of bowel obstruction or an ileus. While the presence or absence of bowel sounds and their character is rarely diagnostic, high-pitched, tinkling bowel sounds should prompt a search for bowel obstruction, particularly in those with a history of abdominal surgery.

Palpation provides a roadmap for further investigation. While topographical localization of pain can direct further work-up, be aware of "extra-quadrant" disease; e.g., appendicitis causing either right upper or left lower quadrant pain. Our patient had diffuse upper abdominal pain, a finding that did not significantly narrow the differential diagnosis.

Peritoneal signs are important predictors of surgical disease. While some patients with serious intra-abdominal conditions may initially present with a benign examination, the presence of voluntary guarding should elicit concern; involuntary guarding is especially worrisome. Peritoneal signs also include rebound tenderness, when the patient complains of significant pain when an examining hand is taken off the belly. Other ways to determine peritonitis include "cough and shake" peritoneal signs and eliciting abdominal pain with heel tap (banging the hand on the patient's heel provokes pain or grimace). Our patient had a soft abdomen without rigidity, rebound or guarding.

In this case, no rectal examination was performed on either visit. Traditional indications for a rectal examination include the presence of a patient with a rectum and the presence of a physician with a finger! The actual utility of the digital rectal exam is less clear. It is certainly useful in the detection of blood and rectal foreign bodies, however several studies show that it rarely provides any information beyond that revealed by abdominal examination in patients with right lower quadrant pain.[2,3] Despite this evidence, it is interesting to note that the failure to perform a rectal exam is a recurring theme in the malpractice literature.[4] If a rectal exam had been performed on the first visit, and had revealed blood, it would have been unlikely to have changed the management, since the physician probably would have assumed the blood was a consequence of bacterial enteritis, and not ischemic bowel.

IV. DIAGNOSTIC TESTING—OVERVIEW

Clearly not every patient with abdominal pain needs diagnostic studies. The need for further study is often driven by high risk findings and the severity or persistence of pain. High risk findings include advanced age, significantly altered vital signs, intractable vomiting, severe tenderness or distention, peritoneal findings, involuntary guarding, and right lower quadrant tenderness in the absence of previous appendectomy. Persistent and significant localized tenderness in any quadrant apart from the left upper quadrant may prompt imaging; e.g., ultrasound for RUQ tenderness, or CT scan for right and left lower quadrant tenderness if appendicitis or acute diverticulitis is suspected. Women of childbearing potential should routinely be tested for pregnancy.

In one study of adults presenting to the ED with non-traumatic abdominal pain, the treating physicians believed that the most useful tests were the abdominal CT scan (31%) and the urinalysis (17%). The CBC was listed as most useful by 14% (these physicians were clearly delusional) and only 7% listed plain x- rays.[5]

V. DIAGNOSTIC TESTING—LABORATORY STUDIES

The nature of the first visit did not mandate laboratory testing, (no, not even a CBC). In fact, the most insidious investigation in the patient with abdominal pain is the CBC. The medical and legal literature is rife with cases where the physician is mislead by the white blood cell count and differential. Patients with abdominal catastrophes may have normal white counts, while others with simple gastroenteritis may have elevated counts with a dramatic left shift. One famous study in women with abdominal pain showed that providing the results of a CBC to an examining physician was more likely to change management in the **wrong** direction (inappropriate discharge or unnecessary

admission).[6] Fortunately, surgeons no longer ask for the results of the CBC when consulted for possible appendicitis. Instead they ask, "What does the CT show?"

The lack of significant localized tenderness in our patient argues against the need for amylase, lipase, or liver function tests. A urinalysis is similarly low yield in a male with diffuse upper abdominal pain.

VI. DIAGNOSTIC TESTING—IMAGING STUDIES

Plain films of the abdomen are generally unhelpful in the assessment of abdominal pain.[7] Apart from the occasional foreign body, they are most useful in two discrete circumstances; clinically suspected viscus perforation (sudden severe pain, rigid abdomen, absent bowel sounds) and clinically suspected obstruction (prior abdominal surgery, intractable vomiting, abdominal distention, and tinkling bowel sounds). This patient did not fit either picture.

In diffuse upper abdominal pain in a young male, imaging of the biliary system would be a low-yield investigation, especially without a positive Murphy's sign. The question at hand is, "Did this patient deserve an abdominal CT scan?"

The CT scan has achieved supremacy as the diagnostic study of choice to rule out most abdominal surgical conditions. While less accurate than ultrasound for evaluation of biliary or adnexal disorders, it is the study of choice in detecting appendicitis, diverticulitis, gut perforation, intra-abdominal abscesses, AAA (in stable patients), and possibly ischemic bowel. CT scans may decrease the rate of unnecessary surgery and hospital admissions while increasing the rate of early appropriate surgery.[8] The problem is determining the appropriate candidate for this study. Currently, there are no good evidence-based guidelines describing who should be scanned. However, the best candidates are probably those likely to have serious disease, including the elderly and patients with significantly abnormal examinations, especially if pain is localized to one of the lower quadrants.

VII. MEDICATIONS IN PATIENTS WITH ABDOMINAL PAIN

There are a variety of interventions to control abdominal pain. The patient's response to some of these, such as H2 blockers, GI cocktails, antacids, and antispasmodics may provide diagnostic information. Non-steroidal anti-inflammatory drugs, in particular parenteral ketorolac, are useful for presumed biliary or renal colic; however, it is poor form to give them in the setting of peptic ulcer pain.

Until recently the use of narcotics to control abdominal pain was discouraged under the assumption that they would mask serious pathology. Several studies have successfully challenged this assumption.[9,10,11,12] In nearly all studies, administration of narcotic pain medication did not adversely affect the physician's ability to identify surgical disease, and in many cases enhanced it. However, in one prospective observational study (non-randomized), the authors found an association between administration of opioids and adverse outcome in patients with abdominal pain. They hypothesized that since patients with worse pain are more likely to be given opioids, pain severity might be a marker of poor prognosis.[13] Another paper noted the association between opioid administration and successful litigation in ruptured appendicitis.[14]

The studies are hard to compare since they used a wide variety of narcotics; some PO, others IM or IV (and some of the opioids are not even available in the US). In general, I use 4–8 mg of IV morphine

in adults (or 25–50 mg of IV Demerol) to start, and then titrate up as needed. If given with Phenergan to a nauseated patient, these relatively small doses do the trick in most patients. If someone obviously has a surgical abdomen with severe pain, I have no problem giving 10 mg of IV morphine right from the start.

I reserve narcotics for those with significant abdominal pain and tenderness. I do not routinely give it for minor cramping or typical gastritis/PUD pain. I also have a general rule to scan patients who require parenteral narcotics, unless they have a chronic pain-type diagnosis such as previously CT or US-diagnosed biliary colic or recurring pancreatitis with typical presentation and no peritoneal signs.

In our patient, there are several minor concerns regarding the use of pain medication. First, there was no attempt to use non-narcotic interventions, such as a GI cocktail (which generally contains an antacid, lidocaine, and an antispasmodic). Second, a repeat abdominal examination was not documented. While the progress note states the patient felt better after the narcotic administration, it would have been prudent to actually palpate the abdomen again prior to discharge. Documentation of serial examinations of the patient with abdominal pain remains a cornerstone of patient care (and risk management). Finally, the question remains, should a patient with undifferentiated abdominal pain severe enough to require parenteral narcotics get an abdominal CT scan? While I personally think that the answer is "Yes," this question has not been adequately answered by the literature.

VIII. FOLLOW UP FOR ABDOMINAL PAIN

Abdominal pain (and in particular, missed appendicitis) remains a leading cause of malpractice litigation in Emergency Medicine. Patients who present to the ED with abdominal pain are well-served by a mandatory recheck in 8–12 hours. While many argue that this does not represent a national standard of care, it remains an important risk management strategy. Routine instructions may include, "Please return to the ED for a recheck in 8–12 hours; sooner if you get worse."

IX. SUMMARY OF THE CASE

If this patient had been a 75 year old vasculopath with atrial fibrillation and pain out of proportion to physical findings, the diagnosis of ischemic gut would have been first on the list. However, the pretest probability of mesenteric thrombosis in a previously healthy 24 year old with abdominal pain is astronomically small. In retrospect, this patient must have had a severe undiscovered coagulation disorder (protein C deficiency, antiphospholipid syndrome, antithrombin III deficiency, etc.) responsible for his calamitous decline.

TEACHING POINTS ABOUT CASE 6:

- While rectal bleeding is a red flag for serious disease, most rectal bleeding in a young patient is due to hemorrhoids or simple enteritis.
- Caution should be used in using the term "gastroenteritis" as a diagnosis. Consider using "vomiting" or "vomiting and diarrhea" instead.
- Administration of small amounts of narcotic medication to patients with abdominal pain does not adversely affect the ability to diagnose surgical disease.
- Repeat abdominal examinations prior to discharge are prudent.
- Follow up in patients with abdominal pain should be within 8–12 hours.

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