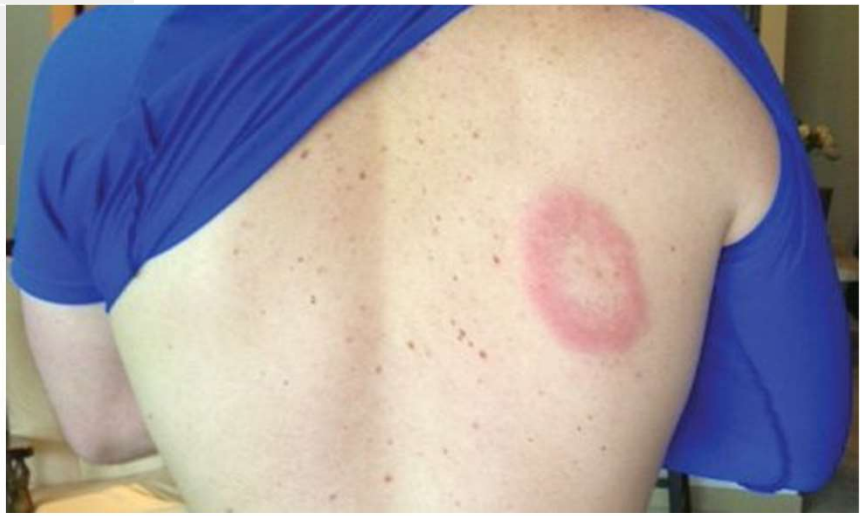
WARM UP!

A 22-year-old man is evaluated in the emergency department 1 hour after awakening with right-sided facial weakness. He reports a 2-day history of headache but has had no fever. He lives in Minnesota and has removed two embedded ticks from himself and three from his dog over the past 3 weeks. The patient is otherwise healthy and takes no medication.

On physical examination, vital signs are normal. Nuchal rigidity and right facial nerve (cranial nerve VII) palsy are noted. Mental status is intact. Skin examination findings are shown.

All other physical examination findings are unremarkable.

Results of laboratory studies show a leukocyte count of 11,500/μL (11.5×10^9/L).

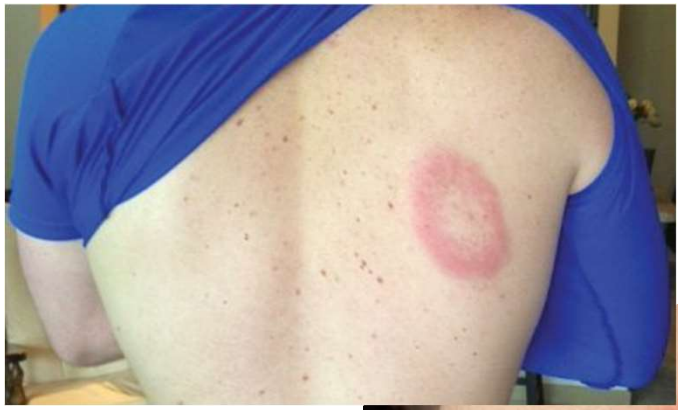


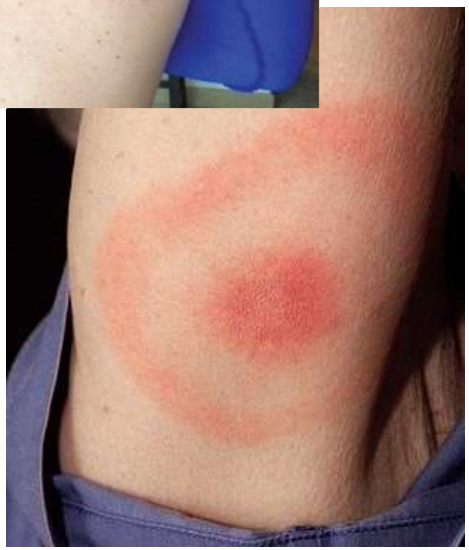
Which of the following is the most appropriate initial management?

- **A** *Borrelia burgdorferi* antibody testing
- **B** Ceftriaxone administration
- **C** Doxycycline administration
- **D** Head CT
- **E** Lumbar puncture

STAGES

Stage	Onset after infection	Clinical findings
Early localized	≤ 4 weeks	EM, fever, myalgia, lymphadenopathy
Early disseminated	2 weeks – 6 months	Multiple sites of EM, flu-like symptoms, heart block, myocarditis, **facial nerve palsy, meningitis**, radiculopathy
Late disseminated	≥ 6 months	Recurrent large joint arthritis, neurologic symptoms (peripheral neuropathy, encephalopathy), dermatologic symptoms (acrodermatitis chronica atrophicans)
Post-Lyme disease syndrome	Years	Fatigue, arthralgia, myalgia, memory / cognition impairment





Lyme Stage	Onset after Infection	Clinical Findings	Laboratory Confirmation	Treatment[a]
Early localized	≤4 wk	EM at site of tick attachment, fever, lymphadenopathy, myalgia	Not needed if EM present	Doxycycline, 100 mg PO BID × 10-21 d (first-line therapy) *or* Amoxicillin, 500 mg PO TID × 14-21 d *or* Cefuroxime axetil, 500 mg PO BID × 14-21 d
Early disseminated	2 wk-6 mo	Multiple sites of EM, flu-like syndrome, heart block, myocarditis, facial nerve palsy, meningitis, radiculitis	Not needed if EM is present; otherwise, two-tier serologic testing CSF testing for intrathecal antibody production if CNS involvement is a concern	1. First-degree block with PR interval ≥300 msec, second- or third-degree AV nodal block, myocarditis: IV penicillin or IV ceftriaxone × 28 d 2. First-degree AV block with PR interval <300 msec: oral treatment same as for early localized disease × 14-28 d 3. Meningitis: IV penicillin or IV ceftriaxone × 28 d 4. Other manifestations (including facial palsy): oral treatment the same as for early localized disease × 14-28 d
Late disseminated	≥6 mo	Recurrent large joint arthritis; neurologic symptoms (peripheral neuropathy, encephalopathy), or dermatologic symptoms (acrodermatitis chronica atrophicans)	Two-tier serologic testing	Initial rheumatologic treatment: same as for early localized but × 30 d Recurrent arthritis after initial treatment: IV ceftriaxone Neurologic disease: IV ceftriaxone × 28 d

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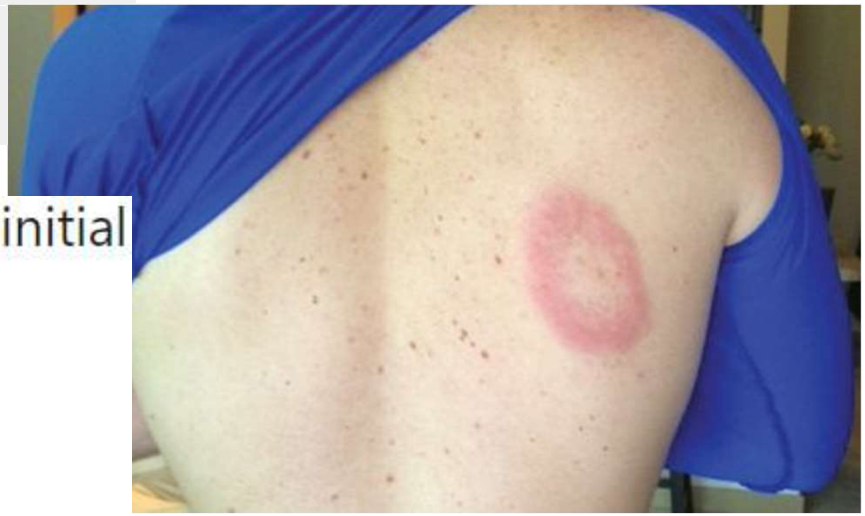


All other physical examination findings are unremarkable.

Results of laboratory studies show a leukocyte count of 11,500/μL (11.5×10^9/L).

Which of the following is the most appropriate initial management?

- 5% A *Borrelia burgdorferi* antibody testing
- 33% B Ceftriaxone administration
- 48% C Doxycycline administration
- 5% D Head CT
- 9% E Lumbar puncture

CC: RECTAL BLEEDING

HPI: 94-year-old woman.
- Presented from SNF after 1 day of large volume bright red bloody bowel movements.
- Pt has been endorsing abd pain x1 week
- Reportedly has not passed gas x4 days
- Baseline AOx1-2 (name, place), does not answer all questions appropriately, fully dependent on ADLs
- Endorsed hx of chronic constipation

- Rest of ROS negative

PMH:
- Chronic constipation
- CAD c/b inferior MI
- Hx PEA arrest due to high-grade AVB s/p PPM (about 1 month ago)
- HFrEF (45-50%)
- Paroxysmal afib
- Schizophrenia

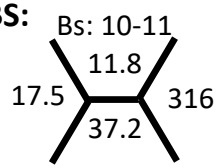
SH:
- Tobacco / EtOH / Drugs: denied

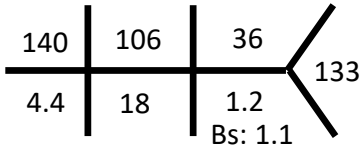
OUTPATIENT MEDS:
- ASA
- Atorvastatin
- Esomeprazole
- Furosemide
- Heparin 5000 units injection
- Metoprolol tartrate 25mg
- Olanzapine
- Sertraline
- Trazodone

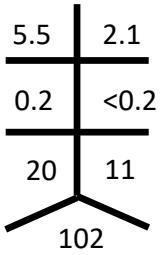
PHYSICAL EXAM:

Tmax: 37.1C, **BP:** 121/56, **HR:** 92, **RR:** 20, **SpO2:** 99% on RA
General: lying in bed, not in significant distress
HEENT: PERRL, EOMI, dry mucus membranes
CV: Tachycardic, regular rhythm, no murmurs/rubs/gallops
Pulm: CTAB, no wheezes/rhonchi/crackles
GI: Mildly-distended, soft, BS+, mild tenderness to palpation diffusely. Large amount of bright red bloody stool in diaper.
Neuro: AOx1-2, moving all extremities spontaneously against gravity, not answering all questions appropriately
Ext: Warm, 2+ pulses, no LE edema

LABS:







Diff
Neutrophils: 87%

INR: 1.3
PTT: 26
Troponin: neg x2
Lactate: 3.0

UA
Spec Grav 1.020; 1+ protein; 2+ Hgb w/ 32 RBCs; 12 WBCs; trace LE; neg nitrite

UCx: 1k to <2.5k E. coli
BCx: NGTD x2
Cdiff: neg
Enteric pathogen panel: neg

CTA Abd/Pelv
No areas of contrast extravasation seen w/in GI tract
Marked amount of colonic stool burden with large stool ball in rectum. Areas of discontinuity at the anterior and R lateral aspect of rectum w/ contents extravasating through. Suspicious for rectal perforation. Several small punctate foci of gas in the region of the wall, may represent small amount of pneumatosis

PROBLEM REPRESENTATION:

Elderly woman w/ significant past cardiac history, presenting with acute abdominal pain, not passing gas, and bright red rectal bleeding due to…

STERCORAL ULCER / COLITIS & RECTAL PERFORATION

STERCORAL ULCER / COLITIS

- Stercoral
  - Describes something that is formed in the colon due to the retention and pressure of feces
- Severe constipation → stone-hard fecalomas → continuous pressure over the bowel wall → mucosal necrosis

TYPE		MECHANISM	ONSET	
Bulk forming	Psyllium (Metamucil) Methylcellulose (Citrucel) Wheat dextrin (Benefiber)	Absorb water and increase fecal mass → colonic distension → promotes peristalsis	Psyllium: 12-72 hrs	Lack of objective evidence regarding effectiveness
Osmotic	Polyethylene glycol (PEG, Miralax) Lactulose Mg hydroxide (MoM) Mg citrate	Osmotic retention of fluids in the bowel → colonic distension → promotes peristalsis	Miralax: 24-96 hrs Lactulose: 24-48 hrs Mg-*: 0.5-6 hrs	Higher doses can cause bloating, cramping, flatulence Risk of hyper-Mg
Stimulant	Senna Bisacodyl	Affect electrolyte transport across intestinal mucosa → acts on mucosa and nerve plexus → stimulate peristalsis Bisacodyl (physical irritation → peristalsis)	Senna: 6-24 hrs Bisacodyl: 6-12 hrs (PO); 0.25-1 hr (supp); 5-20 min (enema)	
Stool softeners	Docusate (Colace)	↓ surface tension of oil-water interface in stool → water incorporated in stool and softer stool	Docusate: 12-72 hrs (PO); 2-15 min (supp)	

TYPE		MECHANISM	ONSET	
Enemas	Tap water Soapsuds Mineral oil (Fleet) Glycerin (Fleet) Sodium phosphate (Fleet)	Fluid volume & detergents stimulate mucosal → peristalsis Mineral oil: lubricating intestines Sodium phosphate: Osmotically draws in water into lumen → distension and promotes peristalsis	Enema: 2-15 min	Soapsuds: rectal mucosal damage Sodium phosphate enemas: Can cause volume depletion, electrolyte abnormalities (hyper-P, hyper-K, severe hypo-Ca). Avoid in older pts & pts w/ electrolyte disturbances
Other: Opioid antagonists	Methylnaltrexone (Subq, PO) Naloxegol (PO)	Mu-opioid receptor antagonist, restricted ability to cross blood-brain barrier	Methylnaltrexone: 30 min (Subq); 1.5 hrs (PO) Naloxegol: <2 hrs	

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LABS:

Bs: 10-11
11.8
17.5 316
37.2

140 106 36 133
4.4 18 1.2
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DIAGNOSIS: FECAL IMPACTION & RECTAL PERFORATION

LEARNING POINTS:

- LGIB ddx
  - **Structural:** diverticulosis, hemorrhoids, post-polypectomy bleeding, polyps, malignancy, anal fissure, colonic / rectal ulcers
  - **Vascular:** ischemic colitis, angiodysplasias, colonic / rectal varices, congenital or systemic diseases causing vascular anomalies (HHT, CREST), tumors (hemangiomas, Kaposi sarcoma)
  - **Inflammatory:** IBD, infectious colitis, radiation colitis / proctitis
- Management of constipation & laxatives
  - PO hydration, exercise, fiber
  - Bulk forming: psyllium, wheat dextrin, cellulose
  - Osmotic: miralax, lactulose, magnesium
  - Stimulant: senna, bisacodyl
  - Stool softeners / enemas: colace, tap water, soap suds, Fleet (mineral oil, glycerin, sodium phosphate)
  - Other (Opioid-antagonists): methylnaltrexone, naloxegol