Anemia Cases (2)

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ABSTRACT
The multiple choice questions are one of the educational tools widely popular among undergraduate and postgraduate candidates, healthcare professionals, and healthcare faculties. Suppose used for efficient assessment, objective orientation, assessment of various levels of learning, versatile applications, and knowledge review process. Besides, it prepares students for license board exams and other advanced board certifications in multiple subjects and specialties. The exams section texts your knowledge with various topics and related information.

Keywords: Multiple choice questions, pharmacy, healthcare, Exams education, Anemia cases.

Case 1

CC: "I have pain in all of my joints and stiffness every morning."

HPI: MQ is a 30-year-old female who presents to her rheumatologist with generalized arthralgias and morning stiffness. Reports she also gets stiff if she has been inactive and needs a little while to 'get going' again. Symptoms have been occurring with increasing severity for the past two months. She also reports becoming fatigued in the afternoon and having muscle achiness. She is now at the point where the stiffness makes her mornings hard, and the arthralgias limit her physical function. She reports that the worst areas are her hands and feet. She struggles with buttons, gripping eating and writing utensils, and opening jars. She used to enjoy going to the gym but finds she can no longer do this as she is too sore and tired after work. She is currently trying to conceive a third child. Also, she reports limited engagement with her children due to fatigue and pain. Using acetaminophen to treat pain but reports little pain relief.

PMH: Hypothyroidism X 5 years

F.H.: Father, alive with CHF; mother alive with HTN and OA; 1 sister, age 40, with anxiety, s/p Hodgkin's lymphoma; 1 brother with asthma

S.H.: She is married and lives with her husband. She has two children, ages 4 and 2, and works as a primary school teacher. She denies alcohol, drug, and tobacco use.

Allergies: Penicillin-hives

Medications: Levothyroxine 88mcg P.O. daily

Vitamin C 500mg PO daily

Vitamin D 1,000 IU P.O. daily

Acetaminophen 500mg 2 tablets PO TID for pain; has been taken three times per day.

Immunizations: Childhood vaccination- completed

HPV series- completed at age 18

Influenza- received last fall

Tetanus- 6 years ago

ROS: Decreased ROM in hands; morning stiffness every day for approximately 1.5 hours; fatigue and muscle soreness experienced daily during afternoon hours; denies H.A., CP, SOB, bleeding, syncope; denies N/V/D, loss of appetite or weight loss

PE: Gen: Pleasant woman in mild distress because of pain in joints

VS: BP 116/66, P 77, R.R. 13, T 37.1°C, Pain 5/10, Ht 160cm, 73kg

HEENT: PERRLA, EOMI, (-) A.V. nicking, hemorrhages, exudates or papilledema

Neck: Supple, no JVD; (-) thyroid nodules or goiter; (-) lymphadenopathy

Resp: CTAB

CV: RRR, no m/r/g, normal S1, S2

Abd: Soft, NTND, +BS

Skin: Warm, normal turgor, no rashes

M.S./Ext: Hands: tenderness, warmth, swelling of the 3rd, fourth, and 5th PIP joints bilaterally; pain in the 3rd and 4th MCP joints bilaterally.

Wrists: decreased ROM bilaterally.

Elbows: good ROM.

Shoulders: good ROM.

Hips: good ROM.

Knees: decreased ROM bilaterally.

Feet: tenderness, warmth, and swelling in the 2nd, 3rd, 4th, MTP joints bilaterally; no edema; full plantar flexion and dorsiflexion; 3+ pedal pulses

Neuro: CN II- XII grossly intact; muscle strength 5/5 UE and 4/5 LE, DTRs ¾ biceps, ¾ patella

Labs:

Na	139 mEq/L
K	4.1 mEq/L
Cl	102 mEq/L
CO2	23 mEq/L
SCr	0.9 mg/dL
BUN	14 mg/dL
Gluc	98 mg/dL
Ca	9.8 mg/dL
Phos	3 mg/dL
P.T.	10 seconds
INR	1.0
aPTT	31 seconds
RBC	4.2 x 106/mm3
WBC	4.5 x 103/mm3
Platelets	435 x 103/mm3
Hgb	11 g/dL
Hct	33.1 %
Alb	3.9 g/dL
Alk Phos	63 IU/L
ALT	15 IU/L
AST	22 IU/L
Bilirubin total	0.6 mg/dL
Cholesterol	200 mg/dL
HDL	55 mg/dL
TG	130 mg/dL
Creatine Kinase	<20 IU/L
Anti-HCV	Negative
HBsAg	Negative
TSH	1.1 mIU/L
ANA	Negative
Anti-CCP	Positive
ESR	47 mm/hr
RF 1:1280 positive	

Radiology: CXR: No fluid, masses, or infiltrates; no cardiomegaly

Hand X.R.: Erosion of MCP and PIP joints bilaterally; measurable joint space narrowing from previous x-ray six months ago

Synovial fluid: Turbid, WBC 6.6 x 109/L

PAS 4.9

1. What is your assessment of this patient?

a. Untreated rheumatoid arthritis with moderate disease activity

2. What signs and symptoms support your assessment?

a. R.A.

i. Pain in multiple joints
ii. Joint Swelling
iii. Destruction of synovial joints
iv. Arthralgia
v. Soreness
vi. Fatigue
vii. ROS: Decreased ROM in hands; morning stiffness every day for approximately 1.5 hours; fatigue and muscle soreness experienced daily during afternoon hours
viii. PE: Hands: tenderness, warmth, swelling of the 3rd, fourth, and 5th PIP joints bilaterally; pain in the 3rd and 4th MCP joints bilaterally. Wrists: decreased ROM bilaterally. Elbows: good ROM. Shoulders: good ROM. Hips: good ROM. Knees: decreased ROM bilaterally. Feet: tenderness, warmth, and swelling in the 2nd, 3rd, 4th, MTP joints bilaterally; no edema; full plantar flexion and dorsiflexion; 3+ pedal pulses
ix. Anti-CCP Positive
x. ESR 47 mm/hr
xi. RF 1:1280 positive
xii. Hand X.R.: Erosion of MCP and PIP joints bilaterally; measurable joint space narrowing from previous x-ray six months ago
xiii. Synovial fluid: Turbid, WBC 6.6 x 109/L

b. Moderate disease activity

i. PAS Score of 4.9 >3.7 - <8

3. What are your therapy goals for R.A.?

a. Improve or maintain functional status
b. Improve the quality of life
c. Disease remission or low-disease activity
d. Controlling disease activity and joint pain
e. Maintain ability to function in ADLs

f. Slow joint damage
g. Delay disability

4. Before you start therapy for this patient's R.A., what vaccinations should the patient have?

a. Pneumococcal – PCV 13 now, PCSV 23 in 1 year
b. Influenza- yearly
c. Hepatitis B
d. Zoster
e. I already completed HPV, so it is NOT needed

5. What non-pharmacologic options does this patient have to help with R.A.?

a. Rest
b. Occupational therapy for joint protection, energy conservation
c. Physical therapy/guided exercise for joint protection, energy conservation
d. Assistive devices
e. Weight reduction
f. Thermotherapy- heat or ice

6. Which DMARD regimen (drug, dose, route, frequency) would you start for this patient's R.A.? What is your rationale?

a. Sulfasalazine 0.5 – 1 g P.O. daily
b. Cannot give methotrexate or leflunomide due to patient wishing to conceive a child
c. Hydroxychloroquine is only used in low-disease activity

7. What lab monitoring and frequency is necessary for your selected therapies?

i. Sulfasalazine
1. Baseline: CBC with platelets, then every 2-4 weeks for first three months, then every 8-12 weeks for months 3-6, then every 12 weeks after six months of therapy

8. In addition to the lab monitoring, what additional monitoring is necessary for the therapy selected?

a. Efficacy:
   i. Pain
   ii. Joint swelling
   iii. Fatigue
   iv. Muscle soreness
   v. Functional status
b. Sulfasalazine
   i. Toxicity
      1. Myelosuppression
      2. Rash

9. Would you add any other medication to the patient's DMARD regimen for her R.A.? If so, what is your rationale?

a. May choose to add in NSAID or corticosteroid for symptom relief as sulfasalazine may take up to 2 months for an effect
   i. NSAID
      1. Adjunct to DMARDs
      2. May be used in a scheduled manner (not prn)
   ii. Corticosteroids
      1. Prednisone 5-10mg P.O. daily
      2. Use until DMARD therapy provides some effect

10. What patient counseling is needed for this patient for their DMARD therapy?

a. Sulfasalazine
   i. Lab work will need to be done frequently
   ii. May experience a rash, N/V/D, anorexia
   iii. Full effect may be seen in 2 months
   iv. It may cause the skin to become yellow-in appearance but is not a sign of harm.
   v. It may predispose the patient to infections; call the provider with any sign of disease or illness.

11. M.Q. returns to her rheumatologist, and her PAS score is 2.5 at three months. What is your assessment of her R.A. at this point? What is your plan for her pharmacotherapy plan?

a. Low disease activity
b. Continue sulfasalazine

12. M.Q. is maintained on the regimen for 24 months. About two years after being placed on DMARD therapy, she starts to experience some of her original symptoms. She comes to her rheumatologist, who assesses her functioning, and her PAS score is now 3.8. She states that she is no longer seeking to become pregnant. While discussing her options, she mentioned that her sister had Hodgkin's lymphoma, and she is aware that some R.A. meds can cause that. At this time, she asks if she could avoid taking any medication that could predispose her to cancer. What is your assessment of this patient's R.A.? What is your pharmacotherapy plan, and what is your rationale?

a. Moderate disease activity
b. Options are: combination DMARD therapy or TNF inhibitor +/- MTX or non-TNF +/- MTX
c. Given that the patient wants to avoid agents that may predispose her to cancer, the best option is a combination of DMARD therapy.
   i. Add MTX 7.5 – 15mg P.O. once weekly to sulfasalazine treatment
   ii. The gold standard of treatment is given once weekly. Partial response to sulfasalazine, so continue to use

13. What monitoring needs to be considered with your new pharmacotherapy plan?

a. Baseline: LFTs, alkphos, albumin, t-bili, hep B and C serology, CBC with platelets, SCr

b. Then every 2-4 weeks for the first three months, then every 8-12 weeks for months 3-6, then every 12 weeks for therapy lasting longer than 12 weeks

14. What patient counseling should be given to the patient with the addition of this new medication?

a. Lab work will need to be done frequently

b. Teratogenic, so appropriate contraception should be used

c. This may cause G.I. upset

d. Avoid alcohol

e. Medication is taken once per week

f. It may predispose the patient to infections; call the provider with any sign of disease or illness.

15. The patient returns in 2 weeks with complaints of mild G.I. upset. What can be done to minimize this for the patient? Please provide your pharmacotherapy plan and rationale.

a. Add folic acid 1mg P.O. daily to the regimen

b. Reduces adverse G.I. events

Case 2

CC: "My knees are killing me; please help me get something for the pain."

HPI: KA is a 72 yo male who presents to his primary medical doctor with complaints of knee pain. He reports general morning stiffness and needing about 20 minutes to 'get things' moving in the morning or after a prolonged rest. He states that his pain is constant and aching while he walks. He notices that if the weather gets cold, his knee pain gets worse. He reports that stairs are difficult for him and that he used to like to go for long walks in the evening, but he has shortened his course or returned in too much pain. I used to bicycle, but I can no longer do that. He states that he has been using acetaminophen every day for the past month, around the clock, to treat pain but reports little pain relief. He applies ice after long walks, which helps for a short period, but the pain returns when he gets up. Pain has been present for the last six months but is getting progressively worse to where the patient is limiting activity. Patient leery of joint injections. Has some vision impairment secondary to macular degeneration.

PMH: Afib, HTN, GERD, T2DM, neuropathic pain, and dry macular degeneration.

F.H.: Father, deceased age 70 from prostate cancer; mother deceased, age 82 from MI; 1 sister with rheumatoid arthritis; 2 brothers alive with heart disease; 1 sister deceased from breast cancer

S.H.: Widowed, lives by himself. Retired painter. Eats takeout for most meals. He has two children who live close by and stop in to check on him once or twice per week. He has a house cleaner to help with chores.

Allergies: Codeine- nausea

Medications:
- Chlorthalidone 25mg P.O. daily
- Diltiazem CD 120mg PO daily
- Rivaroxaban 20mg P.O. daily with dinner
- Lisinopril 40mg P.O. daily
- Metformin 1,000mg PO BID
- Insulin glargine 34 units sub-cut daily at bedtime
- ASA 81mg P.O. daily
- Rosuvastatin 10mg PO daily
- Pantoprazole 40mg PO daily
- Gabapentin 300mg PO TID
- Acetaminophen 500mg 2 tablets PO QID

ROS: Decreased ROM in knees, stiffness in both knees after sitting, pain upon walking, climbing stairs, lifting knees. Denies falling, dizziness, H.A., CP, SOB, melena, hematuria, bruising, syncope; Denies N/V/D, polyuria, polydipsia, change in appetite

PE:

Gen:	Pleasant male in NAD
VS:	BP 142/88, P 65, T 37°C, Pain 6/10 while walking, Ht 172cm, Wt 95 kg
HEENT:	PERRLA, EOMI,
Neck:	Supple, no JVD
Resp:	CTAB
CV:	No m/r/g, normal S1, S2
Abd:	NTND
Ext:	Warm, + pulses, limited ROM, and crepitus in both knees
Neuro:	CN II- XII grossly intact; muscle strength 5/5

Labs:

Na	139 mEq/L
K	3.5 mEq/L
Cl	102 mEq/L
CO2	22 mEq/L
SCr	1.6 mg/dL
BUN	14 mg/dL
Gluc	144 mg/dL
A1c:	7.5%
RBC	4.3 x 106/mm3
WBC	6.6 x 103/mm3
Platelets	435 x 103/mm3
Hgb	11.9 g/dL
Hct	37 %
ALT	26 IU/L
AST	35 IU/L
Cholesterol	180 mg/dL
HDL	50 mg/dL
TG	122 mg/dL
ESR	12 mm/hr

RF negative

Radiology: Knee X-ray (standing A.P.): Bilateral medial femorotibial compartment narrowing, osteophyte formation

1. **What is your assessment of this patient?**
   a. Osteoarthritis of the knees

2. **What is your assessment of this patient's pain?**
   a. Moderate, nociceptive pain

3. **What signs and symptoms support your diagnosis?**
   a. Pain in knees
   b. Pain upon movement
   c. Stiffness < 30 minutes
   d. Age > 50
   e. ESR < 20 mm/hr
   f. Xray- joint space narrowing, osteophyte presence

4. **What non-pharmacologic options does this patient have?**
   a. Weight loss
   b. Physical exercise – aerobic and resistance, land and aquatic exercise
   c. Tai Chi
   d. Acupuncture
   e. Walking aids
   f. Physical therapy/guided exercise

5. **If left untreated, what consequences of osteoarthritis might this patient have?**
   a. Falls
   b. Anxiety
   c. Depression
   d. Pain
   e. Limited mobility

6. **Did this patient receive adequate treatment with acetaminophen?**
   a. Yes
      i. Maximum dose
      ii. Adequate time at max dose

7. **What is your pharmacologic plan for this patient? Please provide your rationale.**
   a. Failed acetaminophen
   b. Avoid oral NSAIDs
      i. Drug-disease interactions with HTN and GERD
      ii. Cause for renal dysfunction (Est CrCl ~40-45ml/min with adj BW)
      iii. Beers list medication- the risk outweighs the benefit in older adults.
   c. May try topical NSAIDs or tramadol or duloxetine
      i. Tramadol
         1. I.R.: 50-100mg every 4-6 hours PRN pain
         2. E.R.: 100mg P.O. daily
         3. Rationale: It is effective for pain control, but the patient must take it multiple times daily for I.R. products. It may also predispose patients to falls but can be helpful with neuropathic pain. There was some fatigue at first, but that should go away. It is a weak opioid, so you may want to try a non-opioid first.
      ii. Topical NSAIDs
         1. Given patients ' limited eyesight, it may be hard to use and require caregiver assistance.
         2. It may not be preferred due to multiple daily administration
   a. Diclofenac 1% gel- apply 4g to each knee four times daily
   b. Diclofenac solution 1.5% Apply 40 drops to each knee four times daily
   c. Diclofenac 2% solution: Apply two pump actuation to each knee twice daily
      iii. Duloxetine 20-60mg P.O. daily
         1. It is not included in the guidelines but may be considered because it relieves musculoskeletal and peripheral neuropathic pain.

8. **What side effects may be seen with your regimen?**
   a. Tramadol
      i. Sedation, confusion, dizziness, risk of falls, flushing, constipation, nausea, xerostomia
   b. Topical NSAIDs
      i. Pruritus, site rash, contact dermatitis, xeroderma, application site pain, desquamation
   c. Duloxetine 20-60mg P.O. daily
      i. Headache, drowsiness, fatigue, nausea, xerostomia, weight loss, weakness

9. What patient counseling should be provided to the patient for your selected regimen?
   a. Tramadol
      i. It May cause sedation and may take a week to be used to it
      ii. Monitor B.M.'s; you may need to add in a laxative
      iii. Use when needed; may consider taking regularly to help control pain if not well-controlled
      iv. Avoid alcohol or other medications that can make you tired

b. Topical NSAIDs
   i. Measure the appropriate amount
   ii. Apply after showering
   iii. Apply to the sides of the knee
   iv. Massage in
   v. Wash hands
c. Duloxetine
   i. Take once a day
   ii. It May take a few weeks to work
   iii. Do not abruptly D.C.

10. What topic products may be adjuncts to your selected therapy?

a. Capsaicin cream
b. Methylsalicylate and menthol
c. Trolamine

11. When will you return this patient to assess your pharmacotherapy plan? What will you monitor?

a. Bring patient back in 2-4 weeks
b. Assess symptoms
   i. Pain
   ii. Mobility
   iii. Tolerance of medications