

2. 57-year-old female is admitted for severe right lower quadrant abdominal pain. Evaluation revealed a ruptured appendix. Past medical history is significant for CAD with PCI to the RCA with a DES four months ago, history of Type 2 Diabetes Mellitus on insulin, chronic kidney disease with a creatinine of 2.2 mg/dl. To manage the multiple comorbidities, medicine service is consulted for preoperative risk assessment. Your recommendation to the surgeon would be:

- a. Obtain stat echocardiogram
- b. Start heparin drip and proceed to surgery
- c. Proceed with surgery
- d. Antibiotics and defer surgery

3. 45 year old male with history of aortic valve replacement with a bi-leaflet mechanical valve on anti-coagulation with coumadin is admitted with abdominal pain and jaundice. Evaluation reveals obstructive jaundice with stone in the common bile duct. Acute cholangitis is diagnosed. ERCP is planned. He has no other medical conditions. INR is 2.2. Next step in the management:

- a. Stop Coumadin and bridge with UFH
- b. Stop Coumadin and bridge with LMWH
- c. Administer Vitamin K and proceed when INR <1.5
- d. No bridging needed, stop Coumadin and proceed when INR < 1.5

Answers on page 12

ID Corner

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The NEJM is running a series of review articles on Critical Care Medicine- here is one on sepsis:

Angus DC, T van der Poll. Severe sepsis and septic shock. N Engl J Med 2013;369: 840-851.

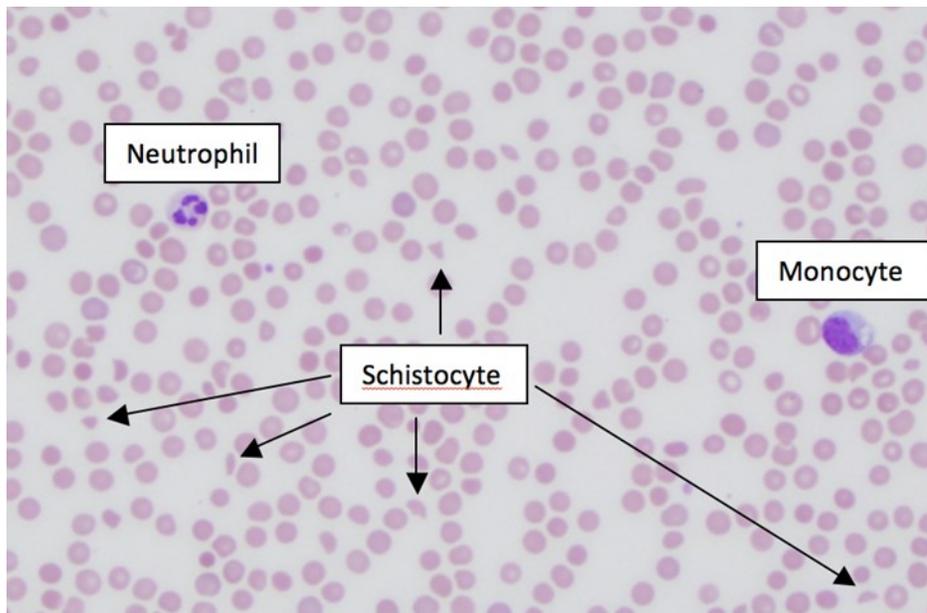
<http://www.nejm.org/doi/pdf/10.1056/NEJMra1208623>

ASK A PATHOLOGIST

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QUESTION: I took care of a patient with Disseminated Intravascular Coagulation (DIC), but the pathologist did not see schistocytes on the patient's peripheral blood smear. What is the role of peripheral smear in diagnosing DIC?



ANSWER: Peripheral smears are frequently ordered to look for schistocytes as part of the work-up for patients with suspected DIC. Schistocytes are red blood cell fragments (see image) created by mechanical trauma to circulating red cells; schistocytes may be elevated in patients with mechanical heart valves, thrombotic microangiopathic anemia (TTP/HUS), HELLP syndrome, malignant hypertension, and metastatic malignancy. Low numbers of schistocytes can also be seen in DIC, however they are usually within or near the reference range of <0.5%. The count of schistocytes in DIC rarely has a specific clinical diagnostic value. Using schistocytes as a first-line diagnostic test for DIC is only 23% sensitive and 73% specific.

While there is no single test that can accurately establish or rule out the diagnosis of DIC, the International Society on Thrombosis and Hemostasis has developed a scoring system for diagnosing DIC using platelet count, prothrombin time, fibrinogen, and D-dimer or fibrin degradation product. A score of 5 or more on this scale is 93% sensitive and 98% specific for DIC. The components of this score are as below.

- Platelet count ($>100,000/\mu\text{L} = 0$, $100,000 - 50,000/\mu\text{L} = 1$, $<50,000/\mu\text{L} = 2$)
- Elevated fibrin marker (e.g. D-dimer, fibrin degradation products) (no increase = 0, moderate increase = 2, strong increase = 3)
- Prolonged PT ($<3\text{s} = 0$, >3 but $<6\text{s} = 1$, $>6\text{s} = 2$)
- Fibrinogen level ($>1\text{g/l} = 0$, $<1\text{g/l} = 1$)

Score >5 is compatible with overt DIC: repeat score daily

Score of <5 is suggestive for non-overt DIC: repeat next 1–2 days

References:

1. Lesesve JF, Martin M, Banasiak C, Andre-Kemeis E, Bardet V, Lusina D, Kharbach A, Genevieve F, Lecompte T. Schistocytes in disseminated intravascular coagulation. *Int J Lab Hematol*. 2013 Nov 22.
2. Levi M, Meijers JC. DIC: Which laboratory tests are most useful. *Blood Reviews* 25. 2011, 33-37.

3. Yu M, Nardella A, Pechet L. Screening tests of disseminated intravascular coagulation: Guidelines for rapid and specific laboratory diagnosis. *Critical Care Medicine* 28(6). June 2000, 1777-1780.
4. Zini G, d'Onofrio G, Briggs C, Erber W, Jou JM, Lee SH, McFadden S, Vives-Corrans JL, Yutaka N, Lesesve JF. ICSH recommendations for identification, diagnostic value, and quantitation of schistocytes. *Int Jnl Lab Hem.* 2012, 34, 107-116.

Send your questions to coberlye@health.missouri.edu to be published in future editions of the Missouri Hospitalist.

Diagnostic Dilemma

Answers:

1) C

Patient is planned for an elective procedure. He has history of recent placement of a drug eluting stent (DES). He is at risk of stent thrombosis with premature discontinuation of dual antiplatelet therapy (DAPT) (<12 months after placement of a DES). Patient should be counselled to defer surgery until it is safe to discontinue clopidogrel. Although data is emerging that it may be safe to stop DAPT early (some trials have shown 3-6 months of DAPT is safe), until guidelines are updated it may be safe to postpone surgery until he completes at least 6 months and possibly even 12 months of DAPT.

2) C

Patient does not need any further workup from a cardiac standpoint. Any workup would delay the definitive therapy which in the case of a ruptured appendix is emergent surgery.

3) D

Patient has a bi-leaflet valve in aortic position which is associated with low risk for thromboembolic events. Therapeutic ERCP is a procedure associated with high bleeding risk. He does not have risk factors like stroke, TIA or prior embolism which would put him at high risk for thromboembolic events. No bridging is needed in this scenario. Mechanical valves in mitral position are associated with high thrombotic risk and will need bridging with UFH peri-procedurally. It is not advisable to use Vitamin K in patients with mechanical valves.