**Cases** (\*Note- Cases were presented in differing orders for each participant)

**Case A. A 32 year-old female with acute onset of easy bruising and “rash”** (Aligns with endpoint #1: The bleeding is most likely unrelated to the prolonged PTT. Consider causes such as thrombocytopenia, platelet function defect, scurvy, Ehlers-Danlos syndrome, etc.)

**PATIENT:** A 32-year-old female

### CHIEF COMPLAINT: The outpatient was referred to the Hematology Department with a chief complaint of acute onset of easy bruising and "rash" for 3 days.

### MEDICAL HISTORY: She had upper respiratory infection symptoms approximately 2 weeks ago. There was no travel history. She had no epistaxis, oral bleeding, or gross blood in the urine or stools. She had never had palpable bruises, hemarthroses or deep muscle bleeds in the past. She has no history of fever or appetite changes.

**FAMILY HISTORY:** Her 2 older brothers had no bleeding symptoms. There was no family history of bleeding or excessive bleeding with surgery or trauma.

**PHYSICAL EXAMINATION:** A diffuse petechial rash was noted on her neck, trunk, extremities and groin. Nonpalpable ecchymoses of varying ages were present on her shins and arms.

**DRUG HISTORY:** No medications

Laboratory Results

1. *Screening Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Platelet count | 30,000/l | 130,000-400,000/l |
| PT | 12 seconds | 10-12 seconds |
| PTT | 56 seconds | <42 seconds |

Question

What additional laboratory testing is indicated?

1. Test for possible heparin interference (Heparin-Degrading Enzyme)
2. Anti-Xa
3. PTT mixing study.
4. Both Heparin-Degrading Enzyme and PTT Mixing Study

(Correct answer: c)

Laboratory Results

1. *Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Mixing PTT (1:1, short incubation) | 35 seconds | <42 seconds |

What further coagulation tests would you consider for this case?

1. Factor VIII assay.
2. Factor IX assay.
3. Factor XI assay.
4. All of the above.

(Correct answer: d)

Laboratory Results

1. *Further Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Factor VIII assay | 70% | 50% to 150% |
| Factor IX assay | 100% | 30% to 150% |
| Factor XI assay |  30% | 50% to 150% |

Question

What would be the most likely diagnosis?

1. Immune thrombocytopenia.
2. Factor XI deficiency.
3. Factor VIII deficiency.
4. Factor XII deficiency

(Correct answer: a)

Rate your confidence that you correctly diagnosed this case (on a scale of 0 – 10, with 0 being the lowest confidence rating).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Low confidence |  |  |  |  |  |  |  |  |  | High confidence |

Please briefly describe any issues/confusion you may have had with this case:

**CASE B. A 32-year-old man with a swollen, tender left knee after injury** (Aligns with endpoint #2: The prolonged PTT is most likely explained by intrinsic factors VIII, IX or XI deficiency)

**PATIENT:** 32-year-old man

**CHIEF COMPLAINT:** This patient was a construction worker who had fallen while working on the basement of a new home. He presented to the emergency room with a swollen, tender left knee. An emergency room intern saw the patient and aspirated the left knee. The aspirate was “bloody”.

**MEDICAL HISTORY:** The patient had a lifelong history of easy bruising that occasionally occurred spontaneously. In addition, he had a history of bleeding after dental extractions on several occasions. However, the patient was unable to provide detailed information regarding the quantity of blood loss after the dental procedures. The patient had not previously received transfusions or been hospitalized.

**FAMILY HISTORY:** There was a history of bleeding problems on the paternal side of the family. The patient’s 82-year-old paternal grandfather had been told at one time that he had “hemophilia”. He continued to work on his farm. The only apparent difficulty that he experience as “swelling of the knees”. To control the swelling, he wrapped each knee with Ace bandage before beginning his workday. This family member had never been hospitalized or adequately evaluated.

**DRUG HISTORY:** The patient was taking no medication at the time of the accident.

**PHYSICAL EXAMINATION:** There was a swollen, tender left knee.

Laboratory Results

1. *Screening Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Platelet count |  430,000/l | 130,000-450,000/l |
| PT | 12 seconds | 10-12 seconds |
| PTT | 60 seconds | <42 seconds |

Question

What additional laboratory testing is indicated?

1. Factor XII assay.
2. Factor VIII assay.
3. PTT mixing study.
4. D-dimer.

(Correct answer: c)

Laboratory Results

1. *Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Mixing PTT (1:1, short incubation) | 40 seconds | <42 seconds |

Question

What further laboratory testing would you order?

1. Factor VIII assay
2. Factor XI assay
3. Factor IX assay
4. All of the above

(Correct answer: d)

Laboratory Results

1. *Further Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Factor VIII assay | 20% | 50% to 150% |
| Factor IX assay | 100% | 30% to 150% |
| Factor XI assay | 80% | 50% to 150% |

Question

What would be your likely diagnosis for this case?

1. Von Willebrand Disease.
2. Factor VIII deficiency
3. Acquired factor VIII deficiency.
4. Factor XI deficiency.

(Correct answer: b)

Rate your confidence that you correctly diagnosed this case (on a scale of 0 – 10, with 0 being the lowest confidence rating).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Low confidence |  |  |  |  |  |  |  |  |  | High confidence |

Please briefly describe any issues/confusion you may have had with this case:

**CASE C. A 42-year-old woman with “abnormal” coagulation result from preoperative evaluation(1)** (Aligns with endpoint #3: The PTT is most likely explained by factor XII deficiency.)

**PATIENT**: 42-year-old woman

**CHIEF COMPLAINT**: This patient was referred from a neighboring hospital for evaluation of a possible coagulopathy. She had recently experienced right upper abdominal pain, which was diagnosed by her family physician as possible cholecystitis. Subsequent cholesystography demonstrated many tiny gallstones with questionable dilatation of the cystic duct. She was then referred to a local general surgeon for further evaluation and, possibly, cholecystectomy. During the initial evaluation, an “abnormal” coagulation result was found. Consequently, she was referred for a coagulation workup.

**MEDICAL HISTORY**: The patient had undergone a number of minor surgical procedures, including tonsillectomy at 6 years of age, cesarean section at 28 years of age and hemorrhoidectomy at 38 years of age. In each instance, there was no abnormal bleeding associated with the surgical procedure. She had never required a transfusion.

**FAMILY HISTORY:** The patient’s parents were living and well, although her father had been treated for hypertension. The patient had two children, both of whom were well.

**DRUG HISTORY**: The patient was taking no medication. She denied taking any drugs, except for aspirin in the remote past for headache.

**PHYSICAL EXAMINATION:** There was no palpable organomegaly or adenopathy. No bleeding manifestations (petechiae, ecchymoses, etc) were observed.

Laboratory Results

1. *Screening Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Platelet count | 250,000/l | 130,000-400,000/l |
| PT | 11 seconds | 10-12 seconds |
| PTT | >120 seconds | <42 seconds |

Question

What laboratory tests are appropriate to order next for further evaluating the prolonged PTT?

1. Test for possible heparin interference (Heparin-Degrading Enzyme)
2. D-dimer
3. Factor XII
4. Lupus anticoagulant screening test.

(Correct answer: a)

Laboratory Results

1. *Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Heparin-Degrading Enzyme | >100 seconds | <42 seconds |
|  |  |  |

What laboratory tests are appropriate to order next for further evaluating the prolonged PTT?

A) PTT mixing study.

B) Factor XI

C) Factor XII

D) Lupus anticoagulant screening test.

(Correct answer: a)

Laboratory Results

1. *Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
|  |  |  |
| PTT Mix (1:1, short incubation) | 40 seconds | <42 seconds |

Question

What further laboratory testing would you consider?

1. Factor XII assay.
2. Factor XI assay.
3. Factor VII assay.
4. All of the above.

(Correct answer: a)

Laboratory Results

1. *Further Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Factor XII assay | <1% | 30% to 150% |

Question

What would be your likely diagnosis for this case?

1. Prekallikrein deficiency
2. Factor VIII deficiency
3. Lupus anticoagulant (LA).
4. Factor XII deficiency

(Correct answer: d)

Rate your confidence that you correctly diagnosed this case (on a scale of 0 – 10, with 0 being the lowest confidence rating).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Low confidence |  |  |  |  |  |  |  |  |  | High confidence |

Please briefly describe any issues/confusion you may have had with this case:

**Case D. A 62-year-old blackman with an external anal hemorrhoid (**1)(Aligns with endpoint #4: The prolonged PTT might be explained by rare factor deficiency – check activity levels of prekallikrein or high molecular weight kininogen.)

**PATIENT**: 62-year-old black man

**CHIEF COMPLAINT**: The patient was admitted with recurrent anal pruritus and pain associated with a large, thrombosed, external hemorrhoid.

**MEDICAL HISTORY**: The patient had no history of bleeding problems. He had undergone a number of surgical procedures, including appendectomy at 12 years of age and partial gastrectomy for recurrent duodenal ulcer disease at 55 years of age. He had not required blood components with either surgical procedure.

**FAMILY HISTORY:** There was no family history of hemorrhagic difficulties.

**DRUG HISTORY:** The patient was using Anusol suppositories and had admitted to frequent use of acetaminophen for headache.

**PHYSICAL EXAMINATION:** A large, thrombosed, external hemorrhoid and a questionable right inguinal hernia were noted. No bleeding manifestations (petechiae, ecchymoses, etc) were observed.

Laboratory Results

1. *Screening Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Platelet count | 180,000/l | 130,000-400,000/l |
| PT | 12 seconds | 10-12 seconds |
| PTT | 114 seconds | <42 seconds |

Question

What laboratory tests are appropriate to order next for further evaluating the prolonged PTT?

1. Test for possible heparin interference (Heparin-Degrading Enzyme)
2. Factor VIII assay
3. Factor XII
4. Lupus anticoagulant screening test

(Correct answer: a)

1. *Laboratory Results*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Heparin-Degrading Enzyme | 110 seconds | <42 seconds |
|  |  |  |

Question

What laboratory test would you order next in further evaluating the prolonged PTT?

1. PTT mixing study
2. Factor XII assay.
3. Factor XI assay
4. Lupus anticoagulant screening test.

(Correct answer: a)

Laboratory Results

1. *Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
|  |  |  |
| PTT Mix (1:1, short incubation) | 40 seconds | <42 seconds |

Question

What additional laboratory procedures are indicated?

1. Factor VII assay.
2. Factor XII assay.
3. Factor V assay.
4. All of the above

(Correct answer: b)

Laboratory Results

1. *Further Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Factor XII assay | 75% | 30% to 150% |

Question

What would be your likely diagnosis for this case?

1. Factor VIII deficiency
2. Rare factor deficiency
3. Lupus anticoagulant (LA)
4. Factor XII deficiency

(Correct answer: b)

Question

Is there interest in identifying rare factor deficiencies? If so, what would you order next?

1. Factor VIII assay
2. Von Willebrand disease assay
3. Lupus anticoagulant assay.
4. Screening test for Prekallikrein (PTT with a prolonged 30 minute incubation)

(Correct answer: d)

**COMMENT**: Prekallikrein deficiency plasma has a prolonged PTT. If the PTT reaction mixture (plasma, phospholipid, and activator) is allowed to incubate for a prolonged period (30 minutes), the PTT of prekallikrein deficiency plasma corrects to normal. This changes is not seen in any other factor deficiency.

Laboratory Results

1. *Further Confirmatory Procedure*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| PTT, 30 minute incubation | 40 seconds | <42 seconds |

Question

What additional laboratory test would be considered next?

1. Von Willebrand disease (VWD)
2. Prekallikrein assay
3. Factor XII assay
4. Factor VIII assay

(Correct answer: b)

Laboratory Results

1. *Further Confirmatory Procedure*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Prekallikrein assay | <1% | 50% to 150% |

Question

What would be your likely diagnosis for this case?

1. Factor VIII deficiency
2. Prekallikrein deficiency
3. Von Willebrand disease
4. Lupus anticoagulant
5. Factor XII deficiency.

(Correct answer: b)

Rate your confidence that you correctly diagnosed this case (on a scale of 0 – 10, with 0 being the lowest confidence rating).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Low confidence |  |  |  |  |  |  |  |  |  | High confidence |

Please briefly describe any issues/confusion you may have had with this case:

**Case E. A 33-year-old man with prolonged PTT found during a routine outpatient evaluation** (1) (Aligns with endpoint #2: PTT is most likely explained by intrinsic factor VIII, IX, or XI deficiency.)

**PATIENT:** 33-year-old man

**CHIEF COMPLAINT:** This patient was enlisted man in the United States Air Force who was referred for evaluation of a possible “coagulopathy”. During a routine evaluation, he was found to have a prolonged PTT.

**MEDICAL HISTORY:** With the exception of frequent episodes of epistaxis as a child, there was no history of spontaneous abnormal bleeding. Previous operations included hernia repair at 2 years of age and tonsillectomy at 10 years of age. There was no abnormal bleeding associated with either of these surgical procedures. The lower wisdom teeth had been extracted 2 years ago with some excessive bleeding.

The patient had previously been diagnosed as having chondromalacia of the left knee and Peyronie’s disease.

**FAMILY HISTORY:** The patient’s parents and a half-sister were living and well. There was no family history of abnormal bleeding.

**DRUG HISTORY:** No medication

**PHYSICAL EXAMINATION:** Noncontributory

Laboratory Results

1. *Screening Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Platelet count | 230,000/l | 130,000-400,000/l |
| PT | 11 seconds | 10-12 seconds |
| PTT | 80 seconds | <42 seconds |

Question

What additional laboratory testing would be helpful in further evaluating the prolonged PTT?

1. Lupus anticoagulant screening
2. Factor VIII assay
3. PTT mixing test
4. None

(Correct answer: c)

1. *Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| PTT Mix (1:1, short incubation)  | 40 seconds | <42 seconds |

Question

What of the following laboratory tests is not indicated?

1. Factor VIII assay
2. Factor XII assay
3. Factor XI assay
4. Factor IX assay

(Correct answer: b)

Laboratory Results

1. *Further Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Factor VIII assay | 80% | 50% to 150% |
| Factor IX assay | 100% | 30% to 150% |
| Factor XI assay | 20% | 50% to 150% |

Question

What would be your likely diagnosis for this case?

1. Factor XII deficiency
2. Factor IX deficiency
3. Acquired factor VIII deficiency
4. Factor XI deficiency

(Correct answer: d)

Rate your confidence that you correctly diagnosed this case (on a scale of 0 – 10, with 0 being the lowest confidence rating).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Low confidence |  |  |  |  |  |  |  |  |  | High confidence |

Please briefly describe any issues/confusion you may have had with this case:

### Case F. A 74-year-old white man with a sudden non-traumatic bleeding (2) (Aligns with endpoint #6: Determine the Bethesda titer of the factor VIII inhibitor to establish a semi-quantitative anti-factor VIII concentration.)

**PATIENT:** 74-year-old white man

### CHIEF COMPLAINT: This patient was admitted to hospital for pain management for degenerative spine disease. On admission the patient was found to have a slightly increased PTT of 35.1 sec (normal range 26.1–33.5) and a normal PT of 12.1 sec (10.0–12.4). On the fifth day of hospitalization the patient developed a sudden non-traumatic deep muscle bleeding of his left forearm and right inner thigh.

**MEDICAL HISTORY:** This patient denied previous non-traumatic bruising or unexplained bleeding. He had undergone multiple uncomplicated back surgeries and a hip replacement within the previous 10 years.

### FAMILY HISTORY: No family history of bleeding disorders was noted in his parents, grandparents or his brother.

**DRUG HISTORY:** He denied using aspirin, non-steroidal, anti-inflammatory drugs, or other herbs and vitamins in the past month. He had a history of high-dose narcotic needs for pain relief (i.e. dilaudid 100–200 mg/day).

### PHYSICAL EXAM: Physical examination was significant for a hematoma measuring approximately 14 cm x 10 cm on the right thigh and a 5 cm x 4 cm hemorrhage on the right forearm and wrist. No obvious trauma was noted including at venipuncture sites. No hepatosplenomegaly was appreciated and no petechiae were seen.

Laboratory Results

1. *Screening Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Platelet count | 230,000/l | 130,000-400,000/l |
| PT | 11 seconds | 10-12 seconds |
| PTTHeparin-Degrading Enzyme | 110 seconds80 seconds | <42 seconds<42 seconds |

Question

What additional laboratory procedures would be helpful in further evaluating the prolonged PTT?

1. Reptilase time
2. Lupus anticoagulant
3. PTT mixing test
4. D-Dimer

(Correct answer: c)

Laboratory Results

1. *Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
|  |  |  |
| Mixing PTT (1:1, short incubation) | 110 seconds | <42 seconds |

Question

What further laboratory testing would you order?

1. Factor VIII assay
2. Factor XI assay
3. Factor IX assay
4. All of the above

(Correct answer: a)

Laboratory Results

1. *Further Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Factor VIII assay | 5% | 50% to 150% |

Question

What would be your likely diagnosis for this case?

1. Acquired factor VIII deficiency due to an inhibitor
2. Prekallikrein deficiency
3. Factor XI deficiency
4. Factor XII deficiency

(Correct answer: a)

Question

What would be your next step?

1. Determine the Bethesda titer of the factor VIII inhibitor to establish a semi-quantitative anti-factor VIII concentration
2. Check factor XII activity
3. Check for rare factor deficiencies
4. Check lupus anticoagulant

(Correct answer: a)

Rate your confidence that you correctly diagnosed this case (on a scale of 0 – 10, with 0 being the lowest confidence rating).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Low confidence |  |  |  |  |  |  |  |  |  | High confidence |

Please briefly describe any issues/confusion you may have had with this case:

**CASE G. A 62-year-old man with right upper quadrant pain** (1) (Aligns with endpoint #7: The prolonged PTT is most likely due to a lupus anticoagulant.)

**PATIENT:** 62-year-old man

**CHIEF COMPLAINT:** This patient was admitted because of right upper quadrant pain of some duration. After evaluation, it was thought that he had chronic cholecystitis because cholelithiassis has been demonstrated by ultrasound and cholecystograms.

**MEDICAL HISTORY:** The patient had no history of bleeding problems. However, he had a history of illness, including diabetes, which had been difficult to control with dietary modification in combination with oral hypoglycemic agents. Also, he had a history of coronary artery disease, having an old anterior myocardial infarction.

**FAMILY HISTORY:** The family history showed a marked prevalence of coronary artery disease and diabetes. There was a history of diabetes on the maternal and paternal sides of the family.

**DRUG HISTORY:** The patient had taken digitalis, thiazide diuretics, and insulin.

**PHYSICAL EXAMINAMATION:** There was tenderness in the right upper quadrant, and a trace of pitting edema was noted over the legs.

Laboratory Results

1. *Initial Laboratory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Platelet count | 220,000/l | 130,000-400,000/l |
| PT | 11 seconds | 10-12 seconds |
| PTT | 62 seconds | <42 seconds |
|  |  |  |

Question

What additional laboratory testing would be helpful in further evaluating the prolonged PTT?

a) Lupus anticoagulant screening

b) Factor VIII assay
c) PTT mixing test
d) None

(Correct answer: c)

*Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| PTT Mix (1:1, short incubation) | 60 seconds | <42 seconds |

What additional laboratory testing is indicated?

1. Bethesda titer
2. Lupus anticoagulant screening X 2 with different assays
3. Fibrin D-Dimer
4. Factor VIII assay

(Correct answer: b)

Laboratory Results

1. *Confirmatory Procedures*
* Lupus anticoagulant screening test 1 was positive.
* Lupus anticoagulant screening test 2 was positive.

Question

What would be the most likely diagnosis?

1. Factor VIII deficiency
2. Lupus anticoagulant
3. Factor VIII inhibitor
4. Factor IX deficiency

(Correct answer: b)

Rate your confidence that you correctly diagnosed this case (on a scale of 0 – 10, with 0 being the lowest confidence rating).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Low confidence |  |  |  |  |  |  |  |  |  | High confidence |

Please briefly describe any issues/confusion you may have had with this case:

**Case H. A 30-year-old woman with a 24-hour history of headache and altered mental status** (3) (Aligns with endpoint #8: Causes of false negative tests for LA include a weak antibody, high factor VIII, or platelet count greater than 10,000/microliter in a frozen plasma specimen because platelet phospholipids may neutralize LA. If there is strong clinical suspicion, repeat LA testing at a later date. )

### PATIENT: 30-year-old woman

### CHIEF COMPLAINT: This patient presented to the emergency department with a 24-hour history of headache and altered mental status.

### MEDICAL HISTORY: The patient had no history of bleeding problem, but had 4 spontaneous abortions.

### FAMILY HISTORY: Noncontributory

### EVALUATION: An initial head CT showed a left posterior frontal lobe lesion. Subsequent MRI and clinical exam supported the diagnosis of an acute cerebral infarct.

Laboratory Results

1. *Initial Laboratory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Platelet count |  150,000/l | 130,000-400,000/l |
| PT | 10 seconds | 10-12 seconds |
| PTT | 51 seconds | <42 seconds |
|  |  |  |

Question

What additional laboratory testing would be helpful in further evaluating the prolonged PTT?

1. Lupus anticoagulant screening.
2. Factor VIII assay
3. PTT mixing test
4. None

(Correct answer: c)

1. *Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| PTT Mix (1:1, short incubation) | 50 seconds | <42 seconds |

What further coagulation test would you consider?

1. Factor IX assay
2. Fibrin D-Dimer
3. Lupus anticoagulant screening X 2 with different assays
4. Factor XII assay

 (Correct answer: c)

Laboratory Results

1. *Confirmatory Procedures*
* Lupus anticoagulant screening tests were negative.

Based on patient’s history and test results, what would be your likely next step?

1. Check level of factor IX activity
2. Diagnose patient LA negative
3. Check level of factor VIII activity
4. Repeat LA test immediately

(Correct answer: c)

Laboratory Results

1. *Further Confirmatory Procedures*

|  |  |  |
| --- | --- | --- |
| Test | Patient’s Result | Normal Range |
| Factor VIII assay | 200% | 50% to 150% |

Question

Based on patient history and laboratory results, what would your next action be?

1. Diagnose patient LA negative
2. Repeat LA test at later date, if strong clinical suspicion
3. Factor VIII inhibitor
4. Repeat LA test immediately

(Correct answer: b)

Rate your confidence that you correctly diagnosed this case (on a scale of 0 – 10, with 0 being the lowest confidence rating).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Low confidence |  |  |  |  |  |  |  |  |  | High confidence |

Please briefly describe any issues/confusion you may have had with this case: