LUCAS COUNTY

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September 15, 2010

TO: ALL LUCAS COUNTY PARAMEDICS

FROM: Brent Parquette, NREMT-P
LCEMS Continuing Education Program

RE: **Continuing Education – October 2010**

In the month of October class time will be spent in a review of the ***12-Lead ECG in the setting of the Acute Coronary Syndromes.***

Skill stations will once again emphasize the "team approach" to assessment and care. All efforts and interventions in the skill stations will be completed as if working on a real patient. We are looking for the "real-time" efforts required for skill completion. There will be 5 Pediatric / Obstetrical skill stations with 25 minutes per station allotted for completion. I ask that you review the following LCEMS protocols to help better prepare you for class participation:

Tab 800 – Cardiac Protocols
- Section F: Chest Pain / Acute Coronary Syndromes
- Section M: STEMI Alert
- Section R: 12-Lead ECG
- Section S: 12-Lead Transmission

Tab 900 – Medical Emergencies
- Section I: Childbirth / Labor
- Section M: Gynecological / Obstetrical Emergency

Tab 1100 – Pediatric Protocols
- Section L: Neonatal Resuscitation
- Section R: Pediatric Respiratory Distress
- Section S: Pediatric Seizures

Please take time to complete the attached pre-test to help better prepare for your class. A short post-test will be given at the end of each class.

As always, if you have any questions or comments, please fee free to contact me by e-mail or phone. I look forward to seeing you in the coming month.

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October 2010 Pre-Test

1. Hyperacute T-waves and ST-Segment elevation in Leads II, III and aVF would signify what type of myocardial injury pattern?
    a. Inferior wall injury
    b. Anterior wall injury
    c. Septal wall injury
    d. Extensive anterior wall injury

2. BBB (Bundle Branch Block) can be distinguished in any monitored (diagnostic) lead. The 2 criteria for diagnosing BBB are:
    a. Ventricular rhythm and notched QRS complex
    b. Supraventricular rhythm and notched QRS complex
    c. Ventricular rhythm and QRS $\geq$ 120ms
    d. Supraventricular rhythm and QRS $\geq$ 120ms

3. A 42-year-old, 100Kg male is complaining of a sudden onset of difficulty breathing and dizziness. His skin is pale and slightly diaphoretic. P-58 and regular; BP-104/70; RR-18 and shallow. His 12-Lead ECG reveals an acute injury pattern in leads II, III, and aVF. Given his symptoms and presentation you would suspect:
    a. Extensive anterior wall MI
    b. Acute inferior wall MI with RVI
    c. Acute septal wall MI
    d. Anterior wall MI with lateral extension

4. Anticipating complications is important when treating the patient with an acute ischemic event of the heart. During interpretation of the 12-Lead ECG, understanding coronary artery anatomy lends important information for choosing the right treatment in the field. In 90% of the population, the _____ distributes most of the blood supply to the AV node and the inferior wall of the left ventricle making infarcts in this area prone to bradycardic rhythms:
    a. Left main artery
    b. Left anterior descending artery (LAD)
    c. Right coronary artery (RCA)
    d. Left circumflex artery (LCX)

5. Which of the following statements is true in distinguishing LVH (Left Ventricular Hypertrophy) from LBBB (Left Bundle Branch Block) on the 12-Lead ECG:
    a. LVH does not abnormally widen the QRS complex
    b. LBBB does not abnormally widen the QRS complex
    c. LBBB causes an abnormal height and depth of R-waves and S-waves
    d. LBBB is caused by a thickening of the ventricular wall due to increased pressure within the ventricles

6. ST-segment elevation is a primary indicator of:
    a. Ventricular atrophy
    b. Ventricular hypertrophy
    c. Myocardial injury
    d. Arterial aneurysm

7. In the ACS patient, ST-segment depression often indicates:
    a. Myocardial ischemia
    b. Coronary vasospasm
    c. Prinzmetal's Angina
    d. Chronic Pericarditis

8. ECG changes that may be anticipated as a result of myocardial ischemia, injury, and/or necrosis of myocardial tissues include all of the following EXCEPT:
    a. PR-interval prolongation
    b. ST-segment elevation
    c. ST-segment depression
    d. Pathologic Q-wave

9. Inferior wall infarctions are associated most often with occlusions/lesions of the:
    a. Coronary sinus
    b. Bundle of His
    c. Left coronary artery
    d. Right coronary artery

10. ECG leads that record abnormal electrical impulse formation/generation in un-involved myocardial tissue directly opposite injured myocardial tissue are called:
    a. Facing leads
    b. Viewing leads
    c. Reciprocal leads
    d. Endocardial leads

11. Your patient is hypotensive and exhibiting ECG changes consistent with inferior wall injury. You should consider the possibility of:
    a. Right atrial infarction
    b. Left atrial infarction
    c. Right ventricular infarction
    d. Septal wall infarction

12. Leads V_3 and V_4 visualize the _____ wall of the heart's left ventricle?
    a. Inferior
    b. Anterior
    c. Lateral
    d. Posterior

13. LBBB and LVH patterns distort ST/T-segments on the ECG. They mimic ischemic/injury events of the heart by creating:
    a. ST-segment depression
    b. ST-segment elevation
    c. Tall broad T-waves
    d. T-wave inversion
    e. All of the above

14. Hyperacute T-waves and ST-segment elevation in leads I and aVL would signify what type of myocardial injury?
    a. Inferior wall
    b. Lateral wall
    c. Anterior wall
    d. Septal wall

15. A 12-Lead ECG revealing acute anterior wall injury would most likely show reciprocal change in which of the following lead(s):
    a. II, III
    b. aVR, aVL
    c. V3 and V4
    d. aVR, III

16. The 2 most prevalent STEMI mimics in the field are:
    a. Benign Early Repolarization and Pericarditis
    b. Benign Early Repolarization and LVH
    c. LVH and LBBB
    d. Benign Early Repolarization and LBBB

17. Lead V4R should always be evaluated when ECG evidence of _____ is found:
    a. Anterior wall MI
    b. Antero-Septal wall MI
    c. Extensive Anterior wall MI
    d. Inferior wall MI

18. Skin prep is important when acquiring a 12-Lead ECG because:
    a. It can reduce artifact
    b. It removes excessive skin oils for better patch adherence
    c. It will help isolate the electrical signal from the heart
    d. All of the above

19. Your patient is a 36-year-old male who is complaining of a sudden-onset retrosternal chest pain with radiation to the jaw. He has labored respiratory effort and cool/diaphoretic skin. He has no previous medical history and no prescribed medications. 12-Lead electrocardiogram reveals a sinus tachycardia with profound LBBB. This patient, based upon presentation and ECG pattern, would be declared a STEMI and transported to a PCI facility:
    a. Yes
    b. No

20. Your 66-year-old male patient has fallen approximately 10 steps onto a concrete basement floor. A brief episode of unconsciousness is reported by family at the scene. On your arrival he presents alert and oriented with a complaint of left arm pain. You note an obvious deformity of the forearm and suspect a closed fracture. Your patient is amnestic to the event and his vital signs are as follows: P-102 and regular; BP-142/70; RR-22 and regular; Sp02-98% RA. The MC hospital assignment at time of scene arrival was designated as St. Charles Hospital. This patient should be:
    a. Declared an Adult Major Trauma and transported to the closest Level 1/2 trauma facility (St. Vincent)
    b. Declared an Adult Intermediate Trauma and transported to St. Charles
    c. Declared a Geriatric Major Trauma and transported to the closest Level 1/2 trauma facility (St. Vincent)
    d. Declared a Geriatric Intermediate Trauma and transported to St. Charles