Wednesday, October 25, 2006

Cardiology: Heart Failure, Valvular Disease, Myxoma and Arrythmia, continued

CONCLUSION: Sporadic cardiac myxomas contain both extrinsic Fas/FasL dependent and survivin anti-apoptosis pathways that control cell cycles, with changes in Ki-67, p16, p53 and p63.

CLINICAL IMPLICATIONS: The pathogenesis of cardiac myxoma and may provide clues for treatment.

DISCLOSURE: Pao-Hsien Chu, None.

Cardiovascular Disease: Diagnostic Modalities
12:30 PM - 2:00 PM

TEACHING CARDIAC AUSCULTATION IN A VIRTUAL SETTING: IS CLASSROOM INSTRUCTION ANTIQUATED?

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PURPOSE: Only 21% of medical students can accurately recognize heart sounds. Previous work has demonstrated that listening to high-grade repetition of abnormal heart sounds in a classroom dramatically improves proficiency in cardiac auscultation. This study explores whether similar results can be obtained by delivering training completely over the internet and eliminating the classroom aspect entirely.

METHODS: Group A contained 235 third-year medical students who logged onto a website and took an online, computer-based test in cardiac auscultation. They then downloaded a one-hour digital mp3 file containing auditory recognition exercises of 5 basic murmurs (AS, AR, MS, MR, Innocent-Murmur) and 2 extra heart sounds (S3, S4). The file contained 200 repetitions of each sound. After listening to the file, students returned to the website one week later to take an online post-test. For both tests, students listened to the heart sounds in a randomized sequence, selecting the correct answer from a menu. Group B contained 84 different third-year students who took their pretest in a classroom using a portable stereo system. They then downloaded the same one-hour, digital mp3 file that group A used, and later returned to the classroom to take a proctored post-test.

RESULTS: Group A's average pretest scores (31.5 ±20.9%) increased significantly to 80.5 ±16.31% on the post-test (p<.001, paired t-test). Group B's pretest scores (27.5 ±15.7%) increased to 81.8 ±15.7% (p<.001). No difference existed between the two groups (P=NS, un-paired t-tests).

CONCLUSION: Training in cardiac auscultation can be accomplished using an internet web site containing a computerized test and audio-file of auditory recognition exercises. Results obtained in a virtual setting are as effective as those acquired in a proctored classroom.

CLINICAL IMPLICATIONS: This study supports the hypothesis that cardiac auscultation can be taught effectively using the internet alone, and has large implications for the geographic- and cost-effectiveness of this teaching strategy.

DISCLOSURE: Katherine Thomas, Other Dr. Michael Barrett receives royalties from Stethoscope.com, consulting fees from AstraZeneca and owns stock in MED-ED Consulting, Inc.

ADMITTING CHEST RADIOGRAPH EVALUATION IN PATIENTS WITH CONGESTIVE HEART FAILURE

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PURPOSE: To evaluate cases with a chief complaint of shortness of breath, Brain Natriuretic Peptide (BNP)levels more than 400 pg/ml, and to correlate the clinical diagnosis with the admitting chest radiograph findings.

METHODS: Retrospective chart review of 54 patients that had BNP levels greater than 400 pg/ml. The patients were divided in 3 different groups:diagnosis of congestive heart failure (CHF), no diagnosis of CHF, and a mixed diagnosis of CHF and another disease.The final reports by the interpreting radiologist of the emergency room chest radiographs(CXRs) were obtained. Interpretation of the CXRs were correlated to the diagnosis in the three groups.

RESULTS: There were 54 patients: 33 had a diagnosis of CHF, 16 had a mixed diagnosis of CHF and other diseases, and 5 had a diagnosis other than CHF. The mixed diagnosis group presented with 10 patients with pneumonia, 6 patients with chronic obstructive pulmonary disease, 2 patients with asthma, 1 patient with bronchitis, 1 patient with sepsis and one patient with gastrointestinal bleeding. Of the 5 patients without CHF, 4 had a diagnosis of pneumonia and one with atelectasis. Of the CHF only group, only 19/33 (57%) patients had an initial CXR revealing pulmonary vascular congestion. Of the mixed diagnosis group, only 5/10 (50%) patients diagnosed with pneumonia had infiltrates. Of the 6 patients with a diagnosis of chronic obstructive pulmonary disease only one had a chest radiograph showing hyperinflation. Of the 16 patients with a mixed diagnosis only 5 (31%) revealed initial chest radiographs with pulmonary vascular congestion. Of the 4 patients diagnosed with pneumonia alone only 2 patients had chest radiographs supporting the diagnosis.

CONCLUSION: In patients with a chief complaint of shortness of breath and BNP levels more than 400 pg/ml, admitting chest radiograph findings correlate poorly with a clinical diagnosis of CHF and other diseases.

CLINICAL IMPLICATIONS: The diagnosis of CHF alone or concurrently with other disease processes requires an integrative approach and not solely relying on admitting CXR findings or BNP levels.

DISCLOSURE: Fabrizio Monge, None.

UTILITY OF PORTABLE CHEST RADIOGRAPH MEASUREMENTS IN DIFFERENTIATING CONGESTIVE HEART FAILURE FROM OTHER CAUSES OF DYSPNEA IN PATIENTS PRESENTING TO EMERGENCY ROOM

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PURPOSE: To determine if vascular pedicle width (VPW), vascular pedicle ratio (VPR), or cardiothoracic ratio (CTR) on portable chest radiographs (CXR), accurately differentiate congestive heart failure (CHF) from others causes of dyspnea, and if any of these measurements have any additive value to serum B-type natriuretic peptide (BNP) levels.

METHODS: Retrospective chart review of patients presenting to the emergency department with dyspnea. Two radiologists independently reviewed the CXRs and obtained measurements of VPW, VPR and CTR. VPR was calculated by dividing VPW by the diameter of the thorax. Areas under the receiver operating characteristic curve (AUC) were computed from logistic regression models.

RESULTS: Seventy-eight patients were analyzed. The mean age was 68.5 (SD 13.2), 65.5% were women and 84.6% were African-American. 57.7% had the diagnosis of CHF. VPW and VPR could not distinguish patients with CHF from patients with other causes of dyspnea (p=0.37 and 0.128 respectively). CTR alone was a good method of distinguishing patients with CHF from patients with other causes of dyspnea (AUC=78%, 95%CI, 67% to 90%, p<0.001). LogBNP predicted CHF with AUC=90% (p<0.001). When logBNP and CTR were analyzed together, CTR did not add any statistically significant predictive accuracy to a model using BNP (p=0.07).

CONCLUSION: VPW and VPR do not appear to differentiate CHF from other causes of dyspnea in this study group. CTR is a good independent predictor of CHF. CTR does not add any statistically significant predictive value to BNP measurement.

CLINICAL IMPLICATIONS: CXR measurements are readily available, inexpensive, and non-invasive. While VPW and VPR cannot be relied upon to differentiate the causes of dyspnea in patients presenting to the emergency room, CTR may provide useful diagnostic information.

DISCLOSURE: Jair Munoz Mendoza, None.

CORRELATION BETWEEN CHEST RADIOGRAPH AND SERUM BRAIN NATRIURETIC PEPTIDE LEVELS IN PATIENTS PRESENTING WITH DYSPNEA

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PURPOSE: Serum brain natriuretic peptide (BNP) levels are currently in widespread use in emergency departments (ED) to aid in differentiating between dyspnea secondary to congestive heart failure (CHF) versus other causes. Measurements of the vascular pedicle width (VPW) >70