RESEARCH SYMPOSIUM

JUNE 13, 2013
7:00 – 10:00 a.m.

Laros Auditorium

St. Luke's Hospital & Health Network

Dental Residency
Emergency Medicine Residency
Family Medicine Residencies
General Surgery Residency
Internal Medicine Residency
Obstetrics & Gynecology Residency
Orthopaedic Residency
Pastoral Care Residency
Pharmacy Residency
Podiatry Residency

Osteopathic Internship
Transitional Year Internship

Cardiology Fellowship
Geriatric Medicine Fellowship
Hospice/Palliative Care Medicine Fellowship
Podiatric Dermatology Fellowship
Sports Medicine Fellowship
Surgical Critical Care Fellowship
Urogynecology Fellowship

Sponsored by
The Research Institute
Jill Stoltzfus, PhD, Director
stoltzj@slhn.org

ORAL PRESENTATIONS

Note: Residents' and fellows' names are bolded.

1) Distal Radius Traction Views: Inter- and Intra-observer Reliability with Comparison to Computed Tomography
Daniel Avery, MD; Kristofer Matullo, MD; Jill Stoltzfus, PhD

2) Reliability of Baseline ImPACT Testing at Home Versus an Organized School Setting
Jill Crosson, DO; Michael Krafczyk, MD; Jerry Dancho, ATC; Jill Stoltzfus, PhD

3) The Impact of Standardized Testing and Interview Scoring on Emergency Medicine Applicants' Rank Position
Meaghen Finan, MD; Rebecca Jeanmonod, MD; Scott Melanson, MD

4) CXR Yield in Patients with Isolated Chest Pain: Derivation of a Decision Rule
Case Newsom, DO; Karl Weller, DO; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

5) Prevalence and Significance of Prehypertension in Hypertrophic Cardiomyopathy
Yugandhar Manda, MD; Jamshid Shirani, MD

6) Effect of Pharmacologic Anticoagulation for VTE Prophylaxis on Risk of Hemorrhaging in Patients with Chronic Liver Disease and Concurrent Coagulopathy
Jake Reichert, PharmD; Peter Hlavinka, PharmD, BCPS; Jill Stoltzfus, PhD

ORAL PRESENTATION ABSTRACT

Distal Radius Traction Views: Inter- and Intra-observer Reliability with Comparison to Computed Tomography

Daniel Avery, MD; Kristofer Matullo, MD; Jill Stoltzfus, PhD

Introduction/Background

Distal radius fracture characterization with standard radiographs has been consistently poor, leading to a widespread use of computed tomography (CT). Traction radiographs have recently been shown to improve interobserver reliability for fracture characterization and treatment but were performed without CT comparison. Our goal was to compare five traction view images to CT images to evaluate the interobserver and intraobserver reliability of individual fracture fragment identification, the correct identification of fracture fragments on CT imaging versus traction views, and consistency of treatment recommendations.

Methodology

Eleven observers were asked to evaluate two blinded presentations of either traction images or CT images displaying 17 different intra-articular distal radius fractures. Each observer was then asked to identify the presence or absence of 6 specific fracture fragments (radial column, dorsal wall, dorsal ulnar corner, volar ulnar corner, volar rim, and central impaction) and recommend treatment (nonoperative, open reduction internal fixation, external fixation/distraction plating). Analyses were then conducted to evaluate the interobserver reliability of traction view images and CT images for fracture fragment identification with separate Fleiss kappa coefficients using standard errors, generalized to accommodate multiple raters; intraobserver variability for fragment identification using the McNemar test for matched-pair data; correct fracture fragment identification with traction views versus a CT gold standard using an independent samples t-test assuming equal variance; and consistency in treatment selection using descriptive information (frequencies and percentages).

Results

Interobserver reliability for traction view images and CT images were both fair to poor. Intraobserver variability for fragment identification was similar and non-significant for each fragment. Correct identification of fracture fragments was significantly better with the radial column on CT imaging (71.8%) and the volar rim fragment with traction view imaging (72.7%). Treatment recommendation was similar for each imaging modality, with agreement in 80.9% of situations for ORIF and 67.9% for external fixation.

Discussion and Conclusions

Traction view images are a suitable alternative to CT imaging for distal radius fractures. Our data show similar interobserver reliability compared to CT imaging; no significant difference regarding intraobserver variability; consistent correct identification in 4 of 6 major fracture fragments; and little difference in treatment recommendations.

ORAL PRESENTATION ABSTRACT

Reliability of Baseline ImPACT Testing at Home Versus an Organized School Setting

Jill Crosson, DO; Michael Krafczyk, MD; Jerry Dancho, ATC; Jill Stoltzfus, PhD

Introduction/Background

It is recommended that ImPACT testing, a computerized neurocognitive test, occur in a supervised environment. However, there is no research regarding the reliability of taking it at home. We compared baseline ImPACT tests taken at home versus a supervised school environment.

Methodology

All winter and spring athletes at Quakertown High School who had not had a baseline ImPACT were tested. Half of the student-athletes were randomly assigned via a computer-generated numbers table to take the baseline ImPACT at home, while the other half were randomly assigned to take ImPACT at school in an organized, supervised setting. Four weeks later, the groups took the ImPACT test in the opposite setting. We assessed the following five categories of ImPACT: verbal memory, visual memory, reaction time, motor speed and cognitive efficiency score. Using SPSS version 19, separate Pearson product moment correlation coefficients were calculated to determine the association between home-based and school-based ImPACT test score, with $p \leq .05$ denoting statistical significance and no adjustment for the multiple comparisons.

Results

Eighteen students had complete data for analysis, with results as follows:

		HOME TESTING			
		Verbal Memory	Visual Memory	Motor Speed	Reaction Time
SCHOOL TESTING	Verbal Memory	***r = .57 (p = .01)****			
	Visual Memory		.02 (p = .94)		
	Motor Speed			***r = .76 (p < .0001)***	
	Reaction Time				r = .31 (p = .22)

** $p \leq .05$*

There were two statistically significant correlations, revealing a moderate positive association between home- and school-based testing for verbal memory (r^2 = 32.5% of shared variance) and a stronger positive association between home- and school-based testing for motor speed (r^2 = 57.8% of shared variance). The remaining correlations for visual memory and reaction time tested at home versus school were not statistically significant. Additionally, the Cognitive Efficiency Score correlation was .21 (r^2 = 4.4% of shared variance), indicating a weak and non-significant positive correlation (p = .41).

Discussion and Conclusion

This study demonstrates that in some areas (motor speed and verbal memory), home baseline testing is as reliable as school baseline testing. While it is too early to recommend home ImPACT testing, this is a promising start, with the goal of enabling more athletes to take the ImPACT test at home, specifically elite or semi-professional athletes who live in different locations and cannot take a baseline with the team.

ORAL PRESENTATION ABSTRACT

The Impact of Standardized Testing and Interview Scoring on Emergency Medicine Applicants' Rank Position

Meaghen Finan, MD; Rebecca Jeanmonod, MD; Scott Melanson, MD

Introduction/Background

Emergency medicine has become increasingly popular, with demand outpacing residency spots. With popularity of the specialty, residency programs are receiving and sorting through numerous applications in order to comprise their rank lists. Although there is literature on how applicants rank programs, there are few data on what criteria emergency medicine residencies use to select applicants. Our study investigated which components of the application were most predictive of securing a rank list spot.

Methodology

This was a retrospective analysis of a community-based university-affiliated emergency medicine program comprised of eight allopathic positions available per year. Over 600 candidates applied in 2011, with 100 invited to interview. Interviews were open-file, conducted by three or four academic faculty members and one chief resident. A multiple regression analysis of interview scores and standardized test scores was performed.

Results

Over 396 interviews were conducted across 4 years and scored on a standardized scale. The USMLE step one score was 212 with a standard deviation of 17.3. Based on multiple linear regression, the correlation between USMLE score and rank score was -0.32 ($r^2 = 0.10$). The correlation between interview score and rank position was -0.87 ($r^2 = 0.76$).

Discussion and Conclusion

Determining which selection criteria are most significant when comprising a rank list is important for applicants and residency programs alike. In our analysis, interviews contributed 75% of the variance compared to USMLE step one scores. Thus, interview scores appear to be the better predictor of rank position than USMLE scores.

ORAL PRESENTATION ABSTRACT

CXR Yield in Patients with Isolated Chest Pain: Derivation of a Decision Rule

Case Newsom, MD; Karl Weller, DO; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

Introduction/Background

Chest radiographs (CXR) are used for nearly every complaint involving the chest despite risks of radiation exposure. We sought to determine which historical and physical (H&P) findings best predict a clinically relevant CXR in patients with a chief complaint (CC) of chest pain presenting to the Emergency Department (ED).

Methodology

Patients with a CC of chest pain who received CXR as part of their ED evaluation were culled retrospectively from three non-consecutive months of ED visit records. Patients triaged as trauma patients were excluded. Documenting 18 variables of interest (determined by previous studies to indicate associations with abnormal CXR), we reviewed these charts' histories and physicals in concert with their CXR findings. Staff radiology reads were used as the gold standard for defining all CXR findings. Abnormal radiographs were stratified a priori into significant and insignificant acute findings. Clinically significant findings included pneumonia, pleural effusion, pneumothorax, congestive heart failure (CHF), or presence of a new mass. Using multivariate logistic regression, statistically significant H&P variables were incorporated into a clinical decision making rule.

Results

Nine hundred sixty-seven patient charts were reviewed; 5.1% had clinically significant positive findings. H&P factors predictive of significant findings on CXR were patient age over 65 [adjusted odds ratio (AOR) 3.3, 95% confidence interval (CI) 1.7 - 6.3]; prior CHF (AOR 8.4, 95% CI 3.8 - 18.7); history of alcoholism (AOR 11.7, 95% CI 2.9 -47.8); fever (AOR 12.2, 95% CI 3.5 - 42.5); tachypnea (AOR 4.9, 95% CI 1.6 - 15.2); and decreased breath sounds (AOR 6.6, 95% CI 1.8 - 23.6). Applying these items as a decision rule had a sensitivity of 74% and a specificity of 69%. In this low-risk population, the positive predictive value of the rule was 11.4%, and the negative predictive value was 97.9%. If this rule had been used, 65% of these patients would not have required CXR, while 1.3% would have a missed significant finding.

Discussion and Conclusion

For patients presenting with isolated non-traumatic chest pain, CXR is generally unhelpful. In young patients without comorbidity or physical findings, the risk of clinically relevant abnormality on CXR is very low, and CXR can be deferred.

ORAL PRESENTATION ABSTRACT

Prevalence and Significance of Prehypertension in Hypertrophic Cardiomyopathy

Yugandhar Manda, MD; Jamshid Shirani, MD

Introduction/Background

Prehypertension (PreH) is more prevalent than systemic hypertension (HTN, blood pressure ≥140/90mmHg) and is a recognized risk factor for cardiovascular complications. Treatment of PreH prevents development of HTN and improves outcomes. HTN is also reported in ~1/3 of older patients with hypertrophic cardiomyopathy (HCM) and is reportedly associated with older age, higher left ventricular (LV) outflow tract gradients and higher prevalence of symptoms. Our study investigated the prevalence and significance of PreH in HCM, which has not been studied previously.

Methodology

We retrospectively identified 196 HCM adults (mean age 68 ±17, 54% men) and characterized them based on recorded blood pressure at presentation and during follow up (mean 4.8 years): normal (NBP, n=74), PreH (120-139/80-89 mmHg, n=58) or stage I hypertension (SIH, 140-159/90-99 mmHg, n=64). HCM was defined as non-uniformly hypertrophied LV (wall thickness >15 mm) in the absence of systemic (other than mild hypertension) or cardiac disease that could explain degree of hypertrophy. Analysis of data was conducted with SPSS software, with chi square analysis and analysis of variance used for comparing proportions and groups, respectively.

Results

Significant differences existed between clinical characteristics of the 3 groups (Table). However, echocardiography showed no significant differences regarding LV size and function, left atrial size, and presence/severity of mitral regurgitation or outflow tract obstruction. Beta-blocker use was not significantly different, but patients with PreH more often received calcium channel blockers, diuretics or warfarin. Additionally, more patients with PreH died during follow-up (PreH vs. NBP: 34%vs.19%, $p < 0.01$).

	Normotensive (n=74)	**PreH (n=58)**	**SIH (n=64)**
Age, years (mean±SD)	61±21	75±13	72±12*
Age at HCM diagnosis	51±21	68±13	64±11*
Atrial fibrillation	24 (32%)	18 (31%)	30 (47%)
Dyslipidemia	26 (35%)	21 (36%)	28 (44%)
Diabetes	6 (8%)	12 (21%)	22 (34%)*
Coronary artery disease	18 (24%)	27 (47%)	22 (34%)*
CHF	48 (65%)	46 (80%)	55 (86%)*

**p < 0.05*

Discussion and Conclusion

PreH is common among patients with HCM, has comparable clinical profile to SIH associated with HCM, and markedly differs from NBP with HCM. Despite demographic and clinical differences, the echocardiographic features of HCM are remarkably similar among HCM patients with or without PreH or SIH. PreH identifies HCM patients with worse outcomes.

ORAL PRESENTATION ABSTRACT

Effect of Pharmacologic Anticoagulation for VTE Prophylaxis on Risk of Hemorrhaging in Patients with Chronic Liver Disease and Concurrent Coagulopathy

Jake Reichert, PharmD; Peter Hlavinka, PharmD, BCPS; Jill Stoltzfus, PhD

Introduction/Background

Chronic liver disease (CLD) is characterized by alteration in many of the factors necessary for maintaining normal hemostasis. Because of this, it is often assumed these patients experience "auto-anticoagulation," are provided protection from venous thromboembolism (VTE) development, and do not require pharmacologic VTE prophylaxis. However, recent trials have demonstrated that CLD patients may have increased VTE risk, warranting pharmacologic VTE prophylaxis.

Methodology

This retrospective chart review identified network admissions with CLD diagnosis, utilizing ICD-9 codes, with concurrent international normalized ratio (INR) ≥1.5 during hospitalization. Patients were excluded due to admission hemorrhage, thrombosis, or systemic anticoagulation. Admissions were stratified into those with and those without pharmacologic VTE prophylaxis. The primary endpoint was hemorrhage rate utilizing Thrombosis in Myocardial Infarction (TIMI) bleeding definitions. Analysis was performed utilizing chi-square or Fisher's exact tests, and multivariate logistic regression model was created to determine VTE prophylaxis effect on combined bleeding when controlled for covariates.

Results

Primary outcome (receipt of VTE prophylaxis vs. no receipt)

- Incidence of overall (major + minor) hemorrhage: 17.5% vs. 7.4% (p = 0.02)

Secondary outcome (receipt of VTE prophylaxis vs. no receipt)

- Incidence of major hemorrhage: 5% vs. 2.8% (p = 0.47)
- Incidence of minor hemorrhage: 12.5% vs. 4.5% (p = 0.02)

Logistic regression for overall bleeding risk (N=256)			
Covariate	***Adjusted odds ratio***	***95% confidence interval***	***p-value***
Antiplatelet (aspirin, clopidogrel)	1.67	0.49-5.66	0.41
VTE prophylaxis (enoxaparin, fondaparinux, heparin)	3.64	1.50-8.86	0.004*
Maximum INR	1.31	1.08-1.60	0.007*
Platelet count	0.99	0.98-1.00	0.03*

- Incidence of thrombosis: 1.3% vs. 4% (p = 0.25)
- All-cause, inpatient mortality: 7.5% vs. 9.1% (p = 0.67)
- Inpatient, bleeding-associated mortality: 1.3% vs. 1.1% (p = 1.00)
- PRBC transfusion rate:26.3% vs. 18.8% (p = 0.17)
- PRBC units transfused [median (range)]: 2 (1-11) vs. 3 (1-12) (p = 0.20)

Discussion and Conclusion

For patients with CLD and concurrent coagulopathy, pharmacologic VTE prophylaxis while hospitalized significantly increases hemorrhaging risk. It demonstrates an increased rate of overall and minor hemorrhage and implicates VTE prophylaxis as a covariate associated with overall bleeding. This study further elucidates the risks of VTE prophylaxis in patients with CLD and concurrent coagulopathy. However, it was unable to elucidate an association between VTE prophylaxis and many clinically relevant endpoints, including mortality, and PRBC transfusions.

POSTER PRESENTATIONS

Note: Residents' and fellows' names are bolded.

1) Does Routine Echocardiography Improve Risk Stratification of Adults Admitted with Syncope?
Yuba Acharya, MD; Jamshid Shirani, MD; Jill Stoltzfus, PhD

2) Can HAS-BLED Scoring Be Used in Our Patients on Anticoagulation?
Arvind Ankireddypalli, MD; Jessica Rubin, DO; Paula Bordelon, DO; Maria Ghetu, MD; Jill Stoltzfus, PhD

3) Glidescope as a Primary, Rescue and Confirmatory Technique in Trauma Patients
Marilee Carballo, MD; Brian Hoey, MD

4) Aortic Valve Sclerosis on Transthoracic Echocardiography: The Poor Man's Calcium Score
Lakshmi Chebrolu, MD; Yuba Acharya, MD; Jamshid Shirani, MD

5) Impact of Teaching Medical Students in Family Medicine Residency Training
Carol Dao, MD; Oluwaseun Odumosu, MD; Nguyet-Cam Lam, MD

6) Calcium Intake and Exercise Habits of College-Aged Women
Crystal Dickson, MD

7) Calcium Intake and Exercise Habits of College-Aged Women
Crystal Dickson, MD

8) Impact of Uniform Counseling on IUD Continuation Rate
Lina Fouad, MD; Mari Charisse Trinidad, MD; James Anasti, MD

9) Derivation of a Decision Rule for Obtaining a Head CT in the Elderly Fall Patient with Baseline Mental Status
Khalief Hamden, MD; Darin Agresti, DO; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

10) NEXUS in the Alert Elderly Fall Patient
Khalief Hamden, MD; Darin Agresti, DO; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

11) Imaging of the NEXUS-Negative Patient: When We Break the Rule
John Morrison, MD; Rebecca Jeanmonod, MD

12) Randomized Comparison Trial of Tourniquet versus Blood Pressure Cuff for Ultrasound-Guided Peripheral Intravenous Access
Drew Nelson, MD; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

POSTER PRESENTATIONS

Note: Residents' and fellows' names are bolded.

13) Predictors of Traumatic Intracranial Injury in Elderly Fall Patients Meeting Trauma Alert Criteria
John Pester, DO; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

14) Breathing Easier? Stereotactic Body Radiotherapy for Medically Inoperable, Early Stage Lung Cancer
Hyma Polimera, MD; Sachinkumar Kanagali, MD; Tianyou Xue, PhD; David Leh, MD; Nimisha Deb, MD

15) Screening Urine Culture with Mixed Contaminants In Pregnancy: A Risk Factor For GBS Colonization?
Angel Gonzalez Rios, MD; Mari Charisse Trinidad, MD; James Anasti, MD

16) Nursing Treatment Protocols and Physician Order Preference in Chest Pain Patients
Michael Silberman, DO; Rebecca Jeanmonod, MD

17) Overlooked and Underrated: The Importance of Mental Health Illness in the Clinic
Hina Trivedi, DO; Cara Ruggeri, DO; **Joshua Mundorff, DO;** Jill Stoltzfus, PhD

18) Falls in the Elderly: A Look at Fall Recidivism and Hemostasis Inhibiting Agents
Alla Ulitsky, DO; Rebecca Jeanmonod, MD

19) Retrospective Validation of High Yield Criteria for Obtaining Chest X-Ray in Non-Traumatic Chest Pain
Karl Weller, DO; Case Newsom, DO; Donald Jeanmonod, MD: Rebecca Jeanmonod, MD

20) To Squeeze or Not to Squeeze?
John Wilson, MD; Rebecca Jeanmonod, MD; James Cipolla, MD

21) Can Cardiac Dimensions Be Used for Estimating Gestational Age?
Priyanka Zutshi, MD; James Airoldi, MD

PRESENTATION ABSTRACT

Does Routine Echocardiography Improve Risk Stratification of Adults Admitted with Syncope?

Yuba Acharya, MD; Jamshid Shirani, MD; Jill Stoltzfus, PhD

Introduction/Background

Risk stratification is an important aspect of management of syncope. Transthoracic echocardiography (TTE) has been used as part of several risk score systems. However, predictive value of routine TTE is not well studied.

Methodology

We reviewed the outcomes of 103 consecutive patients (mean age 71 ± 17 years, 52% men) referred for TTE as part of inpatient diagnostic work up of syncope. Risk stratification was performed using San Fransisco (SF), univariate and multivariate EGSYS (uEGSYS and mEGSYS) and OESIL scoring systems. Adverse outcomes (cardiovascular events or all-cause mortality) were evaluated at mean follow-up duration of 28 months. Data are reported as mean ± standard deviation for continuous variables and frequency (%) for discrete variables. Comparison of groups was made using Student's t-tests for continuous variables and chi-square tests for categorical variables. A p value <0.05 was considered statistically significant.

Results

Definitive or probable causes for syncope were identified in 80 (77%), and only 1 was made on the basis of TTE results (severe aortic stenosis). Only 16 patients (15%) had an adverse event on follow up. No significant difference in rates of abnormal TTE was observed in those without (group 1, n=87) or with (group 2, n=16) adverse events (87% vs. 81%, p = NS). In 31 patients with prior TTE, no significant interval change was noted. Risk scores based on systems that incorporate TTE abnormalities into their calculation were not significantly different between the 2 groups (uEGSYS 2.8 ± 3.6 vs. 4 ± 3.4, p = 0.23; mEGSYS 3.6 ± 3 vs. 4.6 ± 2.4, p = 0.14; OESIL 1.9 ± 1.2 versus 2.3 ± 0.9, p = 0.19). However, SF scoring system that does not incorporate TTE results was significantly different between the 2 groups (0.9 ± 0.7 vs. 1.4 ± 0.7, p = 0.02). Average cost of hospitalization for syncope was $7,664 ± 8,576, at a length of stay of 3 ± 2.7 days.

Discussion and Conclusion

Routine TTE has little impact on diagnosis, management, and risk stratification of suspected cardiac syncope.

POSTER PRESENTATION ABSTRACT

Can HAS-BLED Scoring Be Used in Our Patients on Anticoagulation?

Arvind Ankireddypalli, MD; Jessica Rubin, DO; Paula Bordelon, DO; Maria Ghetu, MD; Jill Stoltzfus, PhD

Introduction/Background

Most of the common cardiovascular conditions in the elderly are associated with ischemic heart disease, atrial fibrillation, valvular disease, and atherosclerotic vascular disease by either thrombosis or embolism. Many of these patients require antithrombotic therapy, which raises concerns regarding safe use and correct indications for these agents, as the geriatric population is at greater risk of bleeding. The presence of additional medical problems and medications requires assessment of risk-benefit ratios for each patient. Many medical conditions, including atrial fibrillation and venous thromboembolism, are more prevalent in the older population. Benefits have been associated with anticoagulation, as previous studies have shown increased thromboembolism in the elderly population. Greater incidence of bleeding with anticoagulation has also been documented in the older population.

In the U.S., CHADS-2 is the most common scoring system utilized to assess risks/benefits of anticoagulation. In Europe, the HAS-BLED system is used, with the ability to assess over time. The aim of this study was to retrospectively identify at-risk individuals as assessed by the CHADS-2 and to determine the HAS-BLED scoring system correlation with current bleed rate.

Methodology

At St. Luke's Department of Geriatric Medicine, the charts of adults $\geq$ 40 years old were retrospectively reviewed to identify those who received anticoagulation in their lifetime. There were no exclusion criteria. Descriptive outcomes are presented, with Pearson's and Spearman's correlation coefficients used to assess associations.

Results

Eighty-four patients received anticoagulation. The majority of patients had no bleeding events and continued therapy (61/84, 72.6%). Fourteen patients had bleeding events (16.7%), with the majority being GI bleeds. For the total sample, the median CHADS-2 score was 2, with a median of 3 for patients with GI bleed, indicating a slightly higher CHADS-2 score. The correlation between the CHADS-2 and HAS-BLED scoring systems was moderately high (Pearson's $r = .70$, $p < .0001$; Spearman's rho = .68, $p < .0001$). Patients with both DVT/PE and GI bleeding had a median HAS-BLED score of 5.

Discussion and Conclusion

This study suggests that one may be able to apply the CHADS-2 in the same way the HAS-BLED is used in Europe. It also indicates that we may want to reevaluate scores periodically. Additionally, HAS-BLED may continue being used as it has been to predict continued bleeding risk in patients on anticoagulation, with likely applicability for DVT/PE and atrial fibrillation. More in-depth studies are needed to determine the usefulness of the CHAD-S 2 over time, or the newer CHADS-2 VASC, as well as the utility of either scoring system in DVT/PE bleeding risk.

POSTER PRESENTATION ABSTRACT

Glidescope as a Primary, Rescue and Confirmatory Technique in Trauma Patients

Marilee Carballo, MD; Brian Hoey, MD

Introduction/Background

The use of Glidescope videolaryngoscopy has been primarily studied in non-trauma patients, typically in an elective setting. The purpose of this study was to evaluate the use of the Glidescope in an emergent setting, with the goal of defining a potential role for the Glidescope in intubating and confirming endotracheal tube (ET) placement in trauma patients undergoing resuscitation the trauma bay.

Methodology

This was a retrospective cohort study evaluating the use of Glidescope videolaryngoscopy in trauma patients admitted between February 2011 and July 2012 at a level I trauma center that is also a community teaching program. Electronic records from 46 intubated trauma patients were reviewed. The overall success of Glidescope intubation as a primary, confirmatory or rescue technique was recorded. Continuous data and categorical data are reported as median with associated interquartile ranges (IQR) and as frequencies, respectively. Statistical analyses were performed using MedCalc Software for Windows (Mariakerke, Belgium).

Results

The study group included 37 males (80.4%) and 9 females (19.6%), with a median age of 51 years (IQR 29.1-60.0). Most patients were transported via ambulance (n=31, 67.4%), and the remainder via helicopter. The Glidescope was used for confirmation in 17 patients (37.0%). This subset includes patients intubated in the pre-hospital setting as well as those intubated in the trauma bay. Glidescope was used as the primary method of intubation in 16 patients (34.8%) and as a rescue method in 7 patients (15.2%). Six patients (13.0%) had a failed attempt using the Glidescope and were successfully intubated using standard techniques.

Discussion and Conclusion

The Glidescope offers excellent visualization of the vocal cords as documented in all prior studies of its use in non-trauma patients. Allowance for decreased manipulation of the neck and the improved glottic visualization would likely benefit trauma patients with a cervical collar in place. Glidescope is accurate as a confirmatory technique, and may allow successful intubation as a primary and rescue technique. Furthermore, its use as an alternative method for airway rescue may minimize repeat attempts with other rescue devices.

POSTER PRESENTATION ABSTRACT

Aortic Valve Sclerosis on Transthoracic Echocardiography: The Poor Man's Calcium Score

Lakshmi Chebrolu, MD; Yuba Acharya, MD; Jamshid Shirani, MD

Introduction/Background

Aortic valve sclerosis (AVS) is an active atherosclerotic lesion (similar to coronary atheromas) and is associated with coronary and cerebrovascular ischemic events and increased mortality. Focal calcification and bone formation are often detected as part of the pathology of AVS. We sought to investigate the relationship of transthoracic echocardiographic (TTE) AVS with aortic valve and coronary artery calcification (AVC and CAC) detected by multi (64)-slice computed tomography (MSCT).

Methodology

We retrospectively identified 325 patients who underwent calcium scoring and coronary angiography using a 64-slice MSCT scanner (GE Lightspeed VCT, Milwaukee, WI) and had a complete transthoracic echocardiogram performed during the same hospital admission between January 2009 and December 2010 (total MSCT examinations = 568). AVC and CAC scoring were performed using an automated program and reported as absolute values. AVS (focal area of increased echogenicity) without stenosis (transaortic peak Doppler velocity < 2.5 m/s) was graded semi-quantitatively as 0 = absent; 1 = mild (one focal area of increased echogenicity and thickening of the aortic valve); and 2 = moderate to severe (sclerosis involving more than one focal area of increased echogenicity and thickening). The MSCT CAC Score was summarized using medians and interquartile ranges (IQR). The non-parametric Jonckheere-Terpstra test was used to estimate the association between the TTE AVS score and CAC. The Student's t-test was used to compare means between groups.

Results

In 34 (67%) and 42 (82%) patients with TTE AVS, MSCT also showed AVC or CAC, respectively. In addition, 39 of 274 (14%) patients without TTE AVS showed AVC by MSCT. The mean CAC score was 258 ± 751 in the 325 patients and correlated directly with the presence and severity (0 = absent; 1 = mild; 2 = moderate to severe) of TTE AVS ($p < 0.0001$ by Jonckheere-Terpstra Test). Compared to those with both AVS on TTE and AVC on MSCT, patients with AVS on TTE but no AVC on MSCT were younger (mean age 58 ± 10 vs. 69 ± 11 years, $p = 0.0019$), but were as likely to have a total cholesterol >200 mg/dl (59% vs. 65%, p = NS).

TTE AVS Score	% Total Patients	Median MSCT CAC Score (IQR)
0	84	2 (0, 97)
1	9	151 (20, 421)
2	7	256 (9, 821)
All patients	100	8 (0, 179)

Discussion and Conclusion

AVS on TTE is frequently associated with AVC on MSCT and correlates directly with CAC score, a marker of coronary artery disease. Age appears to be an important determinant of development of calcification in AVS.

POSTER PRESENTATION ABSTRACT

Impact of Teaching Medical Students in Family Medicine Residency Training

Carol Dao, MD; Oluwaseun Odumosu, MD; Nguyet-Cam Lam, MD

Introduction/Background

The need for Family Medicine physicians in the current health care system of the United States is great. However, medical students' interest in primary care is still low compare to other specialties. The Family Medicine clerkship and Family Medicine physicians encountered by students may influence them to choose Family Medicine as a specialty. Resident physicians play a major role in teaching medical students during their clinical clerkship. In order to help increase students' interest in primary care, this study examined the effects of teaching medical students during residency training, including how to equip residents to be better teachers and role models for students, especially in Family Medicine.

Methodology

A nine-question survey was sent electronically to past residents of St Luke's Family Medicine and all current residents at St Luke's Allentown and Bethlehem. The survey evaluated if there was a need to develop a formal teaching curriculum to enhance residents' ability to teach. The survey also investigated if teaching medical students was beneficial to residents' training. Additionally, we analyzed a separate anonymous medical student survey about our family medicine clerkship that was collected at our program from 2007-2012.

Results

Eighty responses were collected, with the following outcomes:

- 83% indicated that working with medical students enhance their residency training.
- 69% stated that having medical students is somewhat helpful with office and service responsibilities.
- 72% indicated that the preceptors teach more in the presence of medical students.
- More than half (54%) had little or no formal training prior to teaching medical students.
- 78% thought it would be beneficial to have formal training on how to teach medical students effectively.

Discussion and Conclusion

It is vitally important for the Family Medicine residency to equip residents to be excellent teachers and role models who may influence medical students to choose Family Medicine. This can be achieved by implementing a formal teaching curriculum.

POSTER PRESENTATION ABSTRACT

Calcium Intake and Exercise Habits of College-Aged Women

Crystal Dickson, MD

Introduction/Background

Osteoporosis continues to be a large public health issue. Fractures in the elderly increase mortality and utilize a large amount of health care resources. Frequently, metabolic bone disease is not addressed prior to sustaining these injuries, but rather is dealt with after the patient has undergone surgery or experienced a fracture. Placing patients on calcium, vitamin D, and other medications, including bisphosphonates, aids in maintenance of bone health in older women. Less emphasis has been placed on encouraging younger women to get adequate calcium and vitamin D in order to begin good habits that may prevent fragility fractures. This cross-sectional survey study was conducted in a cohort of college-aged women to determine calcium and vitamin D intake via diet and supplements. Exercise habits were also surveyed to examine general health maintenance and participation in weight bearing (i.e., bone preserving) exercise.

Methodology

A 10-question computer-based survey was sent to a group of college women ranging in age from 18 to 22 at one specific institution. Participants answered questions regarding smoking, alcohol, and dietary calcium intake. A dietary intake form that is validated to estimate daily calcium intake was used. Participants were also asked about exercise habits and how often they participate in specific types of activities. Previous fractures and family history of osteoporosis was also assessed. Finally, participants were asked if they are concerned with bone health and if they would like to learn more about maintaining good bone health.

Results

Fifty-seven participants answered all survey questions. The survey revealed that the majority of respondents exceeded the daily recommended dietary allowance based on age. Most calcium intake came from dairy sources like milk and cheese. Many respondents also participate in weight bearing regular exercise. Alcohol intake and smoking behaviors were also prevalent. Additionally, stress fractures, eating disorders, a family history of osteoporosis and irregular menses were found. Encouraging was the fact that many of the women were interested in learning more about bone health and preventing fragility fractures.

Discussion and Conclusion

Creating programs encouraging and teaching young females about the importance of bone health may aid in preventing fragility fractures later on in life.

POSTER PRESENTATION ABSTRACT

Free Tissue Transfer in the Mangled Lower Extremity

Crystal Dickson, MD

Introduction/Background

Open fractures of the lower extremity often pose a challenge to both patient and physician. A multidisciplinary approach between trauma, orthopaedics, plastic surgery, and rehabilitation services is necessary. Gustillo IIIB injuries by definition require soft tissue coverage and can often prolong the amount of time spent in the hospital. Open fractures requiring free flap transfer are also predisposed to increased rates of infection and nonunion. These complications extend the period of time patients must stay in the hospital due to the need for multiple surgical procedures. The purpose of this investigation was to review the results of free tissue transfer to mangled Gustillo IIIB lower extremities at a large community-based level 1 trauma center. Rates of infection and nonunion were examined, as was hospitalization time.

Methodology

A retrospective review of all trauma patients with Gustillo IIIB and above injuries of the lower extremity from October 2006 to December 2009 at our institution revealed that 22 patients underwent free tissue transfer. All patients were referred to one plastic surgeon for soft tissue coverage that was completed following skeletal fixation. This was done as soon as possible, and free flap choice was based on location of injury. Following the procedure, patients were then followed until time to union and functional rehabilitation. Infection rates, flap failures, and amputations were examined using outpatient and hospitalization records. Rehospitalizations, reoperations, and days spent in the hospital were examined in the same manner.

Results

Results showed that average time to union was approximately 8 months following fixation and soft tissue coverage. Of the 22 patients undergoing free flap coverage, 11 (50%) experienced infections. Eight patients (72.7%) had infections prior to flap coverage that necessitated treatment prior to definitive coverage. All infections except for one occurred in patients whose free flap coverage occurred greater than 12 days following presentation. Two flap failures (9%) occurred and those patients underwent amputation. On average, the number of surgical procedures was 5.6, ranging from 2 to 16. This includes washouts and definitive coverage procedures. These surgical procedures were performed during hospital admissions that averaged 2.2 admissions per patient (range 1- 6). Mean length of stay per patient was a 24.6 hospital days (range 5 - 63).

Discussion and Conclusion

These results show that open Gustilo IIIB and higher injuries requiring free tissue transfer are accompanied by a high rate of infection and long time to union. The average time spent in the hospital and number of procedures is also increased compared to patients with closed injuries.

POSTER PRESENTATION ABSTRACT

Impact of Uniform Counseling on IUD Continuation Rate

Lina Fouad, MD; Mari Charisse Trinidad, MD; James Anasti, MD

Introduction/Background

The intrauterine device (IUD) is a safe, highly effective form of long-term contraception that is increasingly being utilized. While an excellent choice for many women, side effects may prompt early discontinuation. In an attempt to increase IUD continuation rates in our patient population, a uniform counseling program for IUD users was instituted.

Methodology

A retrospective study of patients seeking an IUD at St. Luke's Women's Health Center between 2005 and 2010 was performed. Removal rates within one year of insertion were tracked before and after implementation of a uniform counseling program. This program included a formal discussion of alternative contraception, risks, benefits and proposed therapies for common IUD related problems. In addition, supplemental educational materials were given to the patient. A follow-up visit was then scheduled within 7 days for IUD insertion. A Student's t-test was conducted to assess group differences before and after the counseling program.

Results

There were 357 patients available for review prior to the counseling program (Mirena 112, Paragard 247). Within one year of insertion, 79 patients (22.1%) had the IUD removed [Mirena 23 (20.5%), Paragard 56 (22.1%)]. There were 446 patients available for review in the formal counseling group (Mirena 341, Paragard 105). Within one year of insertion, 61 patients (13.6%) had their IUDs removed [Mirena 42 (12.3%), Paragard (18.1%)]. This was a statistically significant difference ($p = 0.002$).

Discussion and Conclusion

A uniform counseling program instituted before IUD insertion appears to increase the continuation rate.

POSTER PRESENTATION ABSTRACT

Derivation of a Decision Rule for Obtaining a Head CT in the Elderly Fall Patient with Baseline Mental Status

Khalief Hamden, MD; Darin Agresti, DO; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

Introduction/Background

Falls are a major cause of morbidity in the elderly population. We studied which historical and clinical features predict traumatic intracranial injuries (ICI) in patients presenting with fall.

Methodology

This was a prospective observational study of patients ≥ 65 years presenting with fall to a tertiary care teaching facility. Patients were eligible if they were at baseline mental status (as per family or chronic care facility staff) and were not triaged to the trauma bay. At presentation, a data form was filled out by treating physicians regarding mechanism and position of fall, history of head strike, presence of new headache, loss of consciousness (LOC), and signs of head trauma. Unknown parameters (e.g., LOC) were conservatively analyzed by presuming them to be present. Radiographic imaging was obtained at the discretion of treating physicians. Charts were subsequently reviewed to determine imaging results. All patients were called in follow-up at 30 days to determine outcomes in those who were not imaged and to assess for delayed complications. Data were analyzed using stepwise logistic regression.

Results

Seven hundred eighty-seven patients (mean age of 83.6) were enrolled; 4 were lost to follow-up and not included in the analysis. A total of 632 (80.7%) underwent head CT; 26 CTs showed traumatic ICI. One patient had a CT after admission to the hospital demonstrating acute subdural hematoma (SDH), resulting in 27 total ICIs (3.4%). Fourteen patients had SDH, 7 had subarachnoid hemorrhage, 3 had cerebral contusion, and 3 had a combination of injuries. Logistic regression yielded 2 study variables that distinguished patients with ICI from those without ICI: history of LOC [adjusted odds ratio (AOR) 2.8, 95% confidence interval (CI) 1.23 - 6.38] and the presence of signs of head trauma (AOR 12.0, 95% CI 2.62 - 54.5). Applying these 2 variables to this study population as a decision rule would have a sensitivity of 92.6%, a specificity of 39.7%, a positive predictive value of 5.2%, and a negative predictive value of 99.3%. This would have reduced overall head CT utilization by 133 scans.

Discussion and Conclusion

Elderly fall patients who are at their baseline mental status have an incidence of ICI of 3.4%. The best predictors of ICI are physical findings of trauma to the head and history of LOC. History of head strike, mechanism and position at time of fall, and presence of headache did not help distinguish patients with ICI from those without ICI.

POSTER PRESENTATION ABSTRACT

NEXUS in the Alert Elderly Fall Patient

Khalief Hamden, MD; Darin Agresti, DO; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

Introduction/Background

We sought to apply NEXUS low-risk criteria to elderly fall patients to better define its utility in this cohort.

Methodology

This was a retrospective application of NEXUS low risk criteria to a cohort of elderly patients (age ≥ 65) presenting with fall to a level 1 trauma center with an annual census of 70,000. Patients triaged to the trauma bay were identified through query of the trauma registry for a one year period beginning June of 2011. Signs of head trauma, neck tenderness, alcohol intoxication, and focal neurologic deficit were abstracted from the trauma evaluation sheet. Patients triaged to the emergency department (ED) were identified by physicians who enrolled a convenience sample of patients and completed a data collection sheet at the time of evaluation that assessed for signs of head trauma and presence of neck tenderness. Enrolled patients were required to be at baseline mental status, defined as a Glasgow Coma Scale (GCS) score of 15 or documentation that the patient was at his/her baseline mental status. Results of imaging were entered into a standardized spreadsheet by trained data abstractors. A patient was assessed as not having a significant neck injury if he/she had a negative CT or MRI; if he/she was admitted and had no sequelae at discharge; if his/her medical record showed repeat hospital visits with no ongoing neck complaints; or if the patient had no complaints in phone follow-up at 30 days. The study was approved by the institutional review board. Chi square tests were used to analyze the data.

Results

Eight hundred sixty-five patients were enrolled, with 66 triaged to the trauma bay and the remainder in the ED. Four patients did not undergo imaging or admission and were lost to follow-up, so they are not included in this analysis. The remaining patients were not intoxicated and were at their baseline mental status. The mean patient age was 83.2 (standard deviation 8.1). Twenty patients had cervical spine or spinal cord injuries; 12 patients had tenderness on examination [odds ratio (OR) 8.1, 95% confidence interval (CI) 3.3 - 20.3, $p < 0.0001$]. Two injured patients had focal neurologic deficits. Using a broad definition of “distracting injury” to include long bone or axial orthopedic injury or any head trauma, 19 injured patients had distracting injury (OR 12, 95% CI 1.6 - 90.3, $p = 0.002$). Using a more conservative definition of “distracting injury” to include only patients with signs of frontal/face trauma, 17 injured patients had “distracting injury” (OR 12.9, 95% CI 3.8 - 44.6, $p < 0.0001$). Narrowing the definition of “distracting injury” to include only signs of frontal/face trauma improved the specificity of NEXUS without decreasing the sensitivity [sensitivity of 100% (95% CI 80 – 100), specificity 59.1% (95% CI 55.7 - 62.4)] in this cohort.

Discussion and Conclusion

NEXUS performs well in the geriatric fall patient. Using a narrower definition of distracting injury to include only patients with frontal/face trauma would reduce the number of imaging studies in this cohort without missing injuries.

POSTER PRESENTATION ABSTRACT

Imaging of the NEXUS-Negative Patient: When We Break the Rule

John Morrison, MD; Rebecca Jeanmonod, MD

Introduction/Background

In spite of validation of NEXUS (National Emergency X-Radiography Utilization Study) in the clearance of cervical spine (c-spine) immobilized patients, NEXUS-negative patients are often imaged during clinical practice. We sought to determine which variables (patient age, mechanism of injury, provider level of training, provider self-reported motivation) contribute to the decision of emergency medicine (EM) residents and faculty to image patients who meet all NEXUS low-risk criteria after blunt trauma.

Methodology

This was a prospective observational study of patients with blunt trauma and risk for c-spine injury who did not meet "trauma team activation" criteria. The study site is a level 1 community trauma center with an annual ED census of 75,000. Providers completed a survey on a convenience sample of patients regarding whether the patient met NEXUS criteria for c-spine clearance (absence of the following: midline tenderness, distracting injury, intoxication, neurologic deficit, or altered mental status). Researchers then retrospectively queried the electronic medical record for patient age, mechanism of injury, and results of diagnostic imaging. Study data were analyzed with chi square and descriptive statistics.

Results

Three hundred patients were enrolled. The mean age of patients was 71 years [standard deviation (SD) ± 22 years]; 169 patients received c-spine imaging, and 53 were NEXUS-negative. There was no significant difference in imaging of NEXUS-negative patients as a factor of medical provider level of training ($p = 0.42$). Of NEXUS-negative patients receiving imaging, 51 (96%) were > 65 years of age, and 52 were being evaluated for a fall on level ground. Imaging revealed 7 positive findings: 2 Type III Dens fractures (fx), 1 Type II Dens fx, 1 C6/C7 facet fx, a C4 lamina fx, a C5 lamina fx, and an occipital fx not visualized on head CT. Two of these injuries occurred in NEXUS-negative patients.

Discussion and Conclusion

Regardless of level of training, providers in our ED do not consistently apply NEXUS low-risk criteria to the geriatric population presenting after falls. In our study, application of NEXUS led to the diagnosis of two c-spine injuries which would otherwise have been missed.

POSTER PRESENTATION ABSTRACT

Randomized Comparison Trial of Tourniquet versus Blood Pressure Cuff for Ultrasound-Guided Peripheral Intravenous Access

Drew Nelson, MD; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

Introduction/Background

Up to 10% of the time, peripheral intravenous (PIV) access is not obtained in two attempts in the emergency department (ED). Ultrasound may be used for guidance in obtaining difficult PIV access. Typically a tourniquet is used to dilate the target vein, but recent research showed that a BP cuff improves dilation compared to tourniquet, which may translate to increased PIV success. We sought to determine if there is a difference in success rates obtaining ultrasound-guided PIV access using a BP cuff versus a tourniquet in patients who have failed two prior PIV access attempts.

Methodology

This was a prospective, randomized, single-blinded trial. A convenience sample of adult patients requiring PIV access who had failed at least two prior access attempts was enrolled. Study packets containing assignments to tourniquet or BP cuff for target vein dilation were created using a random number generator. Nurses opened study packets and prepared the patient for PIV access attempt by either placing a BP cuff inflated to 150 mmHg or by placing a tourniquet according to packet instructions and then draping the extremity to blind the physician. Physicians then attempted ultrasound-guided IV placement. Failures were defined as requiring greater than three ultrasound-guided attempts or 30 minutes of procedure time, or patient intolerance of the procedure. If failure occurred, the patient could be crossed over and reattempted at physician discretion. Data were analyzed using chi square and descriptive statistics. The study was approved by the institutional review board.

Results

Twenty-eight patients were enrolled. Their mean age was 56.6 [standard deviation (SD) 18.5], and mean BMI was 29.6 (SD 7.1). The success rate for the tourniquet group (n=13) and BP cuff group (n=15) were 84.6% and 53.3%, respectively ($p = 0.11$). For the two tourniquet fails, one patient refused further attempts after her first attempt, and the second patient failed all attempts at PIV access and required central venous access. Five of seven BP cuff method failures were successfully crossed over to the tourniquet method.

Discussion and Conclusion

There is a trend that suggests using a tourniquet may be more successful than a BP cuff in obtaining ultrasound-guided PIV access

POSTER PRESENTATION ABSTRACT

Predictors of Traumatic Intracranial Injury in Elderly Fall Patients Meeting Trauma Alert Criteria

John Pester, DO; Rebecca Jeanmonod, MD; Donald Jeanmonod, MD

Introduction/Background

Elderly patients are at high risk for falls that may result in traumatic intracranial injury (ICI). We sought to identify significant predictors of ICI in high acuity elderly patients following a fall.

Methodology

This was a retrospective review of patients aged 65 years or older who were triaged to the trauma bay of a level 1 trauma center from June 2011 to June 2012. Eligible patients were identified through a local database of all trauma patients using the filtering criteria of age ≥ 65 and "fall" as the mechanism of injury. Trauma service evaluation forms (TSEF), imaging studies, lab work, and discharge/death summaries were systematically reviewed by three trained data abstractors. Baseline mental status was defined as Glasgow Coma Scale (GCS) of 15, or GCS < 15 accompanied by documentation on the TSEF that the patient was at his/her baseline. All imaging studies were read by in-house radiologists. Multiple data points were recorded and analyzed including: evidence and location of head trauma, fall mechanism, chief complaint, history of loss of consciousness, presence of other injuries, use of anticoagulant or antiplatelet agents, patient demographics, and disposition. Loss of consciousness was conservatively recorded as such if it was not initially present on the TSEF. The study was reviewed by the institutional review board and found to be exempt. Data were analyzed using descriptive statistics and chi square tests.

Results

One hundred thirty-nine patients ≥ 65 years old (mean 79.8 ± 8.2 years) were triaged to the trauma bay. There was a slight male predominance (n = 75; 54%) in our cohort. Head computed tomography (CT) was obtained on all patients, of whom 40 [prevalence = 29.2%, 95% confidence interval (CI) 21.9 - 37.7] had ICI. Significant predictors of ICI were identified as altered mental status (AMS) [adjusted odds ratio (AOR) = 7.76, 95% CI 2.4 - 25.5; p = 0.0008] and signs of head/face trauma (AOR 5.62, 95% CI 1.43 - 22.14; p = 0.01). The presence of headache may also be significant; however this was inconsistently documented. Headache was found to be significant when conservatively assuming its presence if not documented (AOR 3.33, 95% CI 1.12 - 9.94; p = 0.031). Additional factors evaluated included loss of consciousness (LOC) (AOR 1.89, 95% CI 0.44 - 8.11; p = 0.39); GCS < 14 (AOR 0.88, 95% CI 0.26 - 3.05; p = 0.84); use of aspirin (AOR 1.31, 95% CI 0.30 - 5.78; p = 0.72); clopidogrel (AOR 2.8, 95% CI 0.71 - 11.1; p = 0.14); or warfarin (AOR 1.65, 95% CI 0.37 - 7.98; p = 0.53). Collectively, the presence of any anticoagulant was not identified as being significant (AOR 0.54, 95% CI 0.09 - 3.3; p = 0.05). The presence of AMS and head/neck trauma were highly sensitive in identifying ICI in our cohort, with a sensitivity of 100% (95% CI 89.1 - 100%) and a specificity of 18.6% (95% CI 11.7 - 28%). Additionally, although our sample is small, the absence of both AMS and head/face trauma may identify patients for whom head CT may not be indicated (negative predictive value of 100%, 95% CI 78.1 - 100%).

Discussion and Conclusion

AMS and head/face trauma are sensitive for identifying ICI in elderly patients presenting after a fall. Absence of AMS and head/face trauma may identify patients at low risk for ICI in whom CT scanning may be deferred. Larger studies are needed to validate these results.

POSTER PRESENTATION ABSTRACT

Breathing Easier? Stereotactic Body Radiotherapy for Medically Inoperable, Early Stage Lung Cancer

Hyma Polimera, MD; Sachinkumar Kanagali, MD; Tianyou Xue, PhD; David Leh, MD; Nimisha Deb, MD

Introduction/Background

Stereotactic ablative radiotherapy (SABR), also known as Stereotactic Body Radiotherapy (SBRT), is increasingly accepted as the standard of care for patients with surgically inoperable, early stage, Non-Small-Cell Lung Cancer (NSCLC). We evaluated the oxygen dependency and associated complications post-SABR in a large community hospital setting.

Methodology

Data were extracted retrospectively on patients with Stage 1 NSCLC treated with SABR between March 2010 and December 2012. Institutional Review Board exemption was granted. Patient records were analyzed at 1 month, 3 month and 6 month intervals following SABR.

Results

The study included 36 patients; 20 females (55%) and 16 males (45%). The mean age and standard deviation was 74.33 $\pm$ 8.03 years. Thirty four patients (94%) had Chronic Obstructive Pulmonary Disease; of which 18 were on supplemental oxygen prior to SABR. All patients were treated in a body fix immobilization and utilized rapid arc technique for treatment planning. Patients received a total of 50 Gy, divided into five equal fractions of 10 Gy. The complications noted in our patients were pneumonitis (2/36) and fibrosis (4/36); none of them developed chest wall pain or rib fractures. Thirty patients had an uncomplicated course following SABR. Post- SABR, two patients were newly placed on oxygen therapy due to pneumonitis (1) and worsening dyspnea (1). One patient was successfully weaned off of oxygen therapy.

Discussion and Conclusion

In our experience, use of SABR in the treatment of early stage NSCLC did not worsen lung function. Individuals requiring oxygen therapy had poor lung function independent of SABR or its complications. Patients who are poor surgical candidates for early stage lung cancer have the option of SABR without significant degradation in their quality of life and pulmonary function.

POSTER PRESENTATION ABSTRACT

Screening Urine Culture with Mixed Contaminants in Pregnancy: A Risk Factor for GBS Colonization?

Angel Gonzalez Rios, MD; Mari Charisse Trinidad, MD; James Anasti, MD

Introduction/Background

While treatment of asymptomatic bacteriuria has been shown to improve pregnancy outcomes, there is very little data regarding the clinical significance of urine cultures with mixed contaminants in pregnancy. The aim of this study was to determine if urine culture with mixed contaminants found on initial prenatal screening is associated with any adverse obstetric outcomes.

Methodology

This was a retrospective cohort study. One hundred twenty-two pregnant women with mixed contaminants on urine cultures obtained at < 14 weeks age of gestation were compared to 178 pregnant women with negative urine cultures. A review of electronic medical records was done to determine the incidence of adverse pregnancy outcomes, including preterm delivery, UTI, pyelonephritis, chorioamnionitis, endometritis as well as Group B Streptococcus (GBS) status at time of delivery. Chi square tests were conducted to compare dichotomous categorical outcomes between different groups.

Results

Women with mixed contaminants had a significantly higher incidence of GBS colonization (27% vs. 14.6%, $p = 0.008$). There was no significant difference between groups in the incidence of preterm (11.5% vs. 6.7%, $p = 0.152$), UTI/pyelonephritis (1.7% vs. 1.7%, $p = 0.67$), chorioamnionitis (0.8% vs. 0%, $p = 0.41$) and endometritis (0.8% vs. 0.6%, $p = 0.65$).

Discussion and Conclusion

In this study, mixed contaminants on urine culture during the initial prenatal screening appear to be a risk factor for GBS colonization. No association with other adverse pregnancy outcomes is apparent. A larger cohort is needed to confirm these findings.

POSTER PRESENTATION ABSTRACT

Nursing Treatment Protocols and Physician Order Preference in Chest Pain Patients

Michael Silberman, DO; Rebecca Jeanmonod, MD

Introduction/Background

Overcrowding in emergency departments (ED) has been an increasing problem. Many ED have instituted nursing treatment protocols (NTP) for common presenting chief complaints, with the theory that tests and interventions ordered by nursing staff prior to physician evaluation will decrease patient throughput times as well as improve satisfaction. This has been studied regarding initiation of treatment for asthma, radiographs for extremity injuries, and pain medications for bony injuries. We sought to determine the concordance in test ordering between nurses initiating a NTP for chest pain (CP) patients and physicians caring for those patients in the ED. We further assessed the availability of test results at the time of physician evaluation in patients who underwent NTP.

Methodology

This was a prospective observational study of patients presenting to a 70,000 volume community ED over a 3- month period. A convenience sample of patients was enrolled by the physicians caring for patients in the ED, and any patient with a chief complaint of CP in whom a NTP was initiated prior to physician evaluation was eligible. Treating providers completed a data collection sheet on which they chose, from a comprehensive list of closed possibilities, which tests they thought were important and necessary in evaluation of the patient. Providers were also queried as to whether the tests ordered by the nurse were available to them at the time of evaluation. These data collection sheets were compiled into a standardized Excel spreadsheet by a single trained research associate. Demographic information, disposition, and test results were also collected. The study was reviewed by the institutional review board and found to be exempt.

Results

Sixty-six patients with a chief complaint of CP with a NTP initiated by nursing prior to physician evaluation were enrolled over a 3-month period. The median door-to-physician time was 45 minutes. The mean age of enrolled patients was 58 (standard deviation 16.4) with a range of 19-93. Of those enrolled, we found physicians would have ordered the following blood tests that are included as part of the NTP: troponin 86.4%, CBC 83.3%, CMP 51.5%, CK 39.4%, INR 48.5%, PTT 34.8%, and Mg 36.4%. Physicians would have wanted an EKG in 97% of cases, a chest x-ray in 90.9%, an IV placed in 84.8%, and the patient placed on a monitor in 90.9%. In 66.7% of cases, the physician would not have ordered the “full set” of cardiac orders that are included in the NTP, and in 10.6% of cases, the provider requested additional tests that are not included in the protocol. In 86.4% of cases, the results of all testing were not available at the time of physician evaluation.

Discussion and Conclusions

Solutions to ED overcrowding that are both cost effective and conscientious of time are critical in an increasingly stringent hospital reimbursement system. The potential for NTP systems to increase throughput in busy EDs by initiating commonly ordered tests has been previously touted as an answer, despite the possibility of increased cost. However, this study calls into question the utility of protocols casting a wide diagnostic net, and may favor a smaller scope of NTP testing, particularly as laboratory turnaround times decrease and bedside point of care testing increases. Further study is required to determine the true cost of NTP when combined with ED patient throughput.

POSTER PRESENTATION ABSTRACT

Overlooked and Underrated: The Importance of Mental Health Illness in the Clinic

Hina Trivedi, DO; Cara Ruggeri, DO; Joshua Mundorff, DO; Jill Stoltzfus, PhD

Introduction/Background

When patients fail to keep appointments in outpatient practice, it can be very frustrating, not only for physicians but for the entire health care system. Patients in outpatient residency clinics often fail to keep their scheduled appointments, which is believed to be secondary to factors including transportation issues, family obligations, and hospitalizations, to name a few. Various studies have been conducted regarding predictors of no-show rates in clinics. While this issue has been studied previously, more of an emphasis has been placed on psychosocial problems as a cause of absenteeism in mental health clinics, with less literature on the effects of psychological issues on a primary care population. The purpose of this study was to determine if mental illnesses correlate with no-show rates at a resident-run medical center.

Methodology

A convenience sample of 371 patient charts (127 cases/no shows and 244 controls/shows) was audited from a consecutive two-week period in the Southside Medical Clinic. Multivariate direct logistic regression was conducted with the following 9 covariates selected from past research and clinical observation to determine independent predictors of no-show rates ($p \leq 0.05$): age, gender, primary language, history of drug abuse, diabetes, type of appointment, residency training year of primary care physician, being a new patient, and history of mental health illness.

Results

In our study, 38.1% of patients who “showed” vs. 48.8% of patients who “no showed” had a mental health diagnosis. Logistic regression results revealed that mental health status independently and significantly predicted “no show” rates [adjusted odds ratio (AOR) = 1.73, 95% confidence interval (CI) 1.08 – 2.79, p = .02]. Other significant independent predictors included age (AOR = 1.17, 95% CI 1.07 – 1.28, p = .0009); 2) type of appointment (AOR = 2.57, 95% CI 1.55 – 4.28, p = .0003); and 3) new patient status (AOR = 3.17, 95% CI 1.23 – 8.22, p = .02).

Discussion and Conclusion

Given that mental illness significantly predicts no-show status, this elucidates an area that requires more focus for the overall care of the patient. Perhaps more thorough evaluation of patients’ mental health illnesses at their primary care visits would improve their clinic show rates in the future. Ideas to improve these show rates include depression/bipolar screening, mental health integration within resident education, and improved correspondence with Mental Health Services.

POSTER PRESENTATION ABSTRACT

Falls in the Elderly: A Look at Fall Recidivism and Hemostasis Inhibiting Agents

Alla Ulitsky, DO; Rebecca Jeanmonod, MD

Introduction/Background

Per the Agency for Healthcare Research and Quality, over 2 million people take warfarin every day, and half of those over age 65 take aspirin daily. The Center for Disease Control reports that 1 out of every 3 elderly people falls each year. We sought to determine the proportion of elderly fall patients taking antiplatelet and anticoagulant medications, the indications for those medications, and the one-year fall recidivism in these patients.

Methodology

A convenience sample of patients $\geq$ 65 years was prospectively enrolled after presentation to the emergency department (ED) with a fall. Those eligible for inclusion needed to be at a baseline mental status, as defined by a GCS of 15 or confirmation by their primary caregiver; as well as triaged to the main ED. Trauma bay patients and those with a change in mental status were excluded. The study was performed at a tertiary care level 1 trauma center with an annual census of 70,000. On enrollment, providers completed a standardized data sheet with basic demographic information, cause of fall, and use of anticoagulants or antiplatelet agents. Patient records were then reviewed by trained data abstractors to determine fall recidivism in the prior year, indications for anti-platelet and anticoagulant agents, and whether INR was therapeutic at time of injury. Data were analyzed using descriptive statistics. The study was reviewed and approved by the institutional review board.

Results

Four hundred thirty-six patients were enrolled. The mean patient age was 83.6 years (standard deviation 8.1); 56% came from home, with the remaining arriving from nursing homes or assisted living facilities. Of the 436 patients with falls, 239 were on hemostasis inhibiting agents (11% on clopidogrel or a similar agent, 15% on warfarin, and 44% on aspirin), while 11% of patients were on multiple agents. For the 65 patients on warfarin, the most commonly cited indications were atrial fibrillation and thromboembolic disease, accounting for 53/65 patients (82%). One third of the patients on warfarin were outside the therapeutic range as measured by INR: 12% were supratherapeutic and 20% were subtherapeutic. Only 46% had a therapeutic INR, with 22% not having an INR checked at all. Recidivism was high, with 32% of patients on warfarin and 36% of patients on aspirin having been seen for at least one other fall in the previous year.

Discussion and Conclusion

Elderly fall patients are commonly on medications that inhibit their hemostasis. Fall recidivism is high in this population. ED physicians and primary care providers should educate patients and families about the risks and benefits of their anticoagulation medications, especially in the setting of recurrent falls.

POSTER PRESENTATION ABSTRACT

Retrospective Validation of High Yield Criteria for Obtaining Chest X-Ray in Non-Traumatic Chest Pain

Karl Weller, DO; Case Newsom, DO; Donald Jeanmonod, MD; Rebecca Jeanmonod, MD

Introduction/Background

In an attempt to curtail chest x-ray (CXR) utilization, Rothrock et al. published a clinical decision rule to guide the use of CXR in the non-traumatic emergency department (ED) patient. They found the following criteria were predictive of positive findings on CXR: O2 saturation < 90%, age > 59 years, breath sounds decreased, rales or respiratory rate > 24, embolic disease, alcohol abuse, tuberculosis or temperature ≥ 38° C, and hemoptysis. Their rule was 95% sensitive and 41% specific in the derivation set to identify significant CXR findings of pneumonia, pneumothorax, new/worsening CHF, new mass, rib fracture, foreign body and new atelectasis, effusion, or elevated hemidiaphragm thought to be clinically important. The rule has yet to be validated.

Methodology

This retrospective review took place in a community based level 1 trauma center. Patients from three non-consecutive months distributed over the year who presented to the ED with a chief complaint of chest pain and had a CXR performed were identified. Trained data abstractors reviewed the medical records to ascertain the presence or absence of 18 clinical variables, including those derived in the original decision rule. When data were absent from the record, it was assumed to be negative. The radiologists' dictated report of the CXR was used to identify significant findings including pulmonary edema, pneumonia, pneumothorax, new mass, new effusion, and rib fractures. Sensitivity, specificity and related outcomes were obtained.

Results

Nine hundred sixty-seven patient charts were reviewed with a median patient age of 52 [interquartile range (IQR) 40 - 67]; 866 (89.9%) of CXR were interpreted as normal, 51 (5.2%) had insignificant findings, and 50 (5.1%) had significant findings. Application of the criteria derived by Rothrock et al. had a sensitivity of 74% [95% confidence interval (CI) 59 - 85%]; a specificity of 59% (95% CI 55 - 62%); a PPV of 9% (95% CI 6 -12%); and a NPV of 98% (95% CI 96 -99%). False negative CXR findings included pneumonia (6), pulmonary edema (1), pneumothorax (2), pleural effusion (3), and new mass (1).

Discussion and Conclusion

Application of the Rothrock criteria would have eliminated the need for a CXR in 551 patients presenting for the evaluation of CP, but would have missed 13 significant CXR findings.

POSTER PRESENTATION ABSTRACT

To Squeeze or Not to Squeeze?

John Wilson, MD; Rebecca Jeanmonod, MD; James Cipolla, MD

Introduction/Background

Lactate levels are useful to guide resuscitation needs. Some surgical literature suggests that tourniquet use during phlebotomy falsely elevates these results. Studies using healthy volunteers have not demonstrated a significant difference between lactate values drawn with or without the aid of a tourniquet. No studies have been published using patients in whom a lactate is clinically indicated. The purpose of this study was to determine if tourniquet use during the drawing of a lactate significantly alters the result compared to a level drawn without tourniquet use in an actual patient population.

Methodology

This was a prospective cohort study of a convenience sample of patients in whom a lactic acid draw was clinically indicated. Eligible patients were identified by physicians caring for patients in the emergency department (ED) at a tertiary care community trauma center. Patients or their proxies were approached for enrollment in the study and written informed consent was obtained. Study lactates were acquired using a tourniquet. These values were sent to study investigators only. Lactate levels for clinical use were drawn as per hospital protocol with no tourniquet and reported in the electronic laboratory resulting system as per hospital standard. Time of lactate measurements and patient demographic information were recorded. The two lactate levels for each patient were compared with the Wilcoxon Rank Sum test, and linear correlational analysis was used to assess the overall relationship between values. The study was reviewed and approved by the institutional review board.

Results

Fourteen patients were consented and enrolled. The median lactate level for draws utilizing a tourniquet was 2.5 (interquartile range 1.4 - 2.9), and the level for those without a tourniquet was 2.1 (interquartile range 1.4 -3.1). The difference between paired lactate values was not statistically significant ($p = 0.08$), although the trend was for tourniquet draw lactates to be slightly higher than those without a tourniquet (median difference of 0.1). The correlation coefficient for the 2 values was 0.97 ($r^2 = 0.94$).

Discussion and Conclusion

Phlebotomy with the aid of a tourniquet is significantly easier from a technical stand point. These data, though limited, indicate that lactates can be drawn with the aid of a tourniquet without fear of obtaining falsely elevated levels. Using a tourniquet could prevent unnecessary delays that are often encountered while trying to obtain the blood specimen in an acutely ill patient without a tourniquet. Having the lactate value available quickly will enable clinicians to tailor therapy expediently.

POSTER PRESENTATION ABSTRACT

Can Cardiac Dimensions Be Used for Estimating Gestational Age?

Priyanka Zutshi, MD; James Airoldi, MD

Introduction/Background

There have been several identified methods to estimate gestational age for fetuses. These include crown rump length (CRL), biparietal diameter (BPD), abdominal circumference (AC), femur length (FL), cerebellar diameter, among others. The second and third trimester measurements are not as accurate and have a standard deviation of 2 and 3 weeks, respectively. For patients who present for prenatal care late in the second or third trimester and are unsure of their dates, the ultrasound measurements for estimation of gestational age are subpar. The objective of this study was to compare fetal heart width, length and circumference with gestational age in order to estimate gestational age in patients, especially those presenting late in pregnancy with unknown dates.

Methodology

A retrospective chart review was performed comparing fetal heart width, length and circumference and the estimated gestational age based on previously calculated EDC (Estimated Date of Confinement). The data included fetal echoes performed for gestational ages 20 to 36 weeks, with most measurements between 20 and 26 weeks. On performing a fetal echo, a cardiac/thoracic ratio was obtained using a 4 chamber view for the heart and the thorax. For the 4 chamber view, the markers were placed longitudinally on the heart from the top to the apex. The ellipse included the whole thickness of the walls of the ventricles bilaterally. A Pearson correlation (r) coefficient was used to determine the strength of the association.

Results

Fifty patients with adequate cardiac measurements were identified. A statistically significant relationship was found between fetal heart width, length and circumference measurements and gestational age (width $r = 0.859$, $p < 0.01$; length $r = 0.748$, $p < 0.01$).

Discussion and Conclusion

This study showed that the strongest correlation between fetal heart measurements and gestational age was the cardiac width, although cardiac length and circumference also correlated very well.

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