clinique pour le diagnostic du SAA, la présente étude visait à définir un ensemble de variables discriminantes chez les patients souffrant ou non dun SAA en utilisant les outils dintelligence artificielle. **Methods:** À partir de lensemble des données cliniques disponibles chez les patients investigués pour douleur thoracique au département durgence avec une angiographie par tomodensitométrie (angioCT) visant à éliminer un SAA entre 2008 et 2014, un programme dapprentissage a été chargé de construire un arbre de décision (Clustering And Regression Tree) identifiant les patients ne souffrant pas dun SAA. La variable dintérêt était labsence de SAA et 23 attributs ont été testés. Le diagnostic de SAA était établi avec les résultats de langioCT. Des échantillons aléatoires de 70% de la population étudiée ont été testés de façon récursive (maximum de 100 itérations) pour construire larbre de décision. Six algorithmes dapprentissage (Reg Tree, LR, KNN, Naive B, Random Forest et CN2) ont été comparés et loptimisation du gain dinformation a été mesurée par les techniques de Gain Ratio et de Gini. **Results:** Un total de 198 patients (99 hommes et 99 femmes) dun âge moyen de 63 ans (±16) ont été inclus dans létude, parmi lesquels 26 (13%) souffraient dun SAA. Trois attributs ou regroupements dattributs ont permis de construire un arbre de décision permettant didentifier 114 patients sur 198 (57,6%) ayant une très faible probabilité de SAA (sensibilité visée de 100%). La sensibilité et spécificité de larbre de décision clinique était respectivement de 100% (intervalle de confiance [IC] 95% 86,7-100,0) et 70,4% (IC 95% 62,7-77,3). Les attributs en question étaient labsence de tout facteur de risque (e.g. syndrome de Marfan, chirurgie aortique ou valvulaire, histoire familiale), les signes vitaux (tension artérielle systolique, pouls et choc index) et les D-dimères. Le seuil de D-dimères utilisé pouvait varier entre 1114 et 1211 mcg/L selon lhémodynamie et la présence de facteur de risque. Les attributs suivants nétaient pas discriminants : le sexe, un antécédent de diabète, dhypertension artérielle ou de dyslipidémie, le tabagisme, avoir un déficit de perfusion, une différence de tension artérielle entre les deux bras ou un souffle dinsuffisance aortique et la formule sanguine. **Conclusion:** Les attributs les plus discriminants pour le SAA sont les facteurs à risque, lhémodynamie et les D-dimères. Une étude prospective multicentrique devrait être réalisé afin de développer une règle de décision clinique afin didentifier les patients à très bas risque de SAA à partir de ces attributs.
Keywords: syndrome aortique aigu, algorithme d'investig

LO30

Prevalence of pulmonary embolism among emergency department patients with syncope: a multicenter prospective cohort study

V. Thiruganasambandamoorthy, MD, MSc, M. L.A. Sivilotti, MD, MSc, B. H. Rowe, MD, MSc, A. D. McRae, MD, PhD, M. Mukarram, MBBS, S. Malveau, MS, A. Yagapen, MPH, M. Nemnom, MSc, B. Sun, MD, MPP, University of Ottawa, Department of Emergency Medicine, Ottawa, ON

Introduction: The prevalence of pulmonary embolism (PE) among patients with syncope is understudied. Based on a recent study with an exceptionally high PE prevalence, some advocate investigating all syncope patients for PE, including those with another clear cause for their syncope. We sought to evaluate the PE prevalence among emergency department (ED) patients with syncope. **Methods:** We combined data from two large prospective studies enrolling adults with syncope from 17 EDs in Canada and the United States. Each study collected the results of investigations related to PE (i.e. D-dimer or ventilation-perfusion (VQ) scan, or computed tomography pulmonary angiogram (CTPA)), and 30-day adjudicated outcomes including diagnosis of PE, arrhythmia, myocardial infarction, serious hemorrhage and/or death. **Results:** Of the 9,091 patients (median age 66 years, 51.9% females, 39.1% hospitalized) with 30-day follow-up, 546 (6.0%) were investigated for PE: 278 (3.1%) had D-dimer, 39 (0.4%) had VQ and 347 (3.8%) patients had CTPA performed. 30-day outcomes included: 874 (9.6%) patients with any serious outcome; 0.9% deaths; and 818 (9.0%) patients with non-PE serious outcomes. Overall, 56 patients (prevalence 0.6%; 95% CI 0.5% 0.8%) were diagnosed with PE, including 8 (0.1%) of those admitted to hospital at the index presentation. Only 11 patients (0.1%) with a non-PE serious condition had a concomitant underlying PE identified. **Conclusion:** The prevalence of PE is very low among ED patients with syncope, including those hospitalized following syncope. While acknowledging syncope may be caused by an underlying PE, clinicians should be cautious against indiscriminate over-investigations for PE.
Keywords: syncope, pulmonary embolism, prevalence

LO31

Une valeur de D-dimères de moins de 500 permet-elle d'éliminer un syndrome aortique aigu: une étude de cohorte

A. Cournoyer, MD, V. Langlois-Carbonneau, MD, R. Daoust, MD, MSc, J. Chauny, MD, MSc, Université de Montréal, Hôpital du Sacré-Coeur de Montréal, Institut de Cardiologie de Montréal, Montréal, QC

Introduction: Le syndrome aortique aigu (SAA) comprend les dissections aortiques, les hématomes intramuraux et les ulcères de lintima, trois conditions difficiles à diagnostiquer, potentiellement létales et nécessitant une prise en charge immédiate et fréquemment chirurgicale. Lutilisation dun test de D-dimère a été proposé afin dexclure ces diagnostics et éviter une investigation plus poussée par angiographie par tomodensitométrie (angioCT). Cependant, il est peu plausible que les patients souffrant dhématomes intramuraux aient une valeur de D-dimères très élevée. Dans ce contexte, lobjectif primaire de la présente étude est de déterminer la valeur diagnostique (sensibilité et spécificité et rapport de vraisemblance négatif [RV-]) dun test de D-dimères chez les patients suspectés de SAA au département durgence. **Methods:** Les patients ayant subi une angiographie par tomodensitométrie (angioCT) à la recherche dune dissection aortique entre 2008 et 2014 à lurgence dun hôpital tertiaire montréalais ont été inclus dans cette étude de cohorte rétrospective. Les patients nayant pas eu de dosage de D-dimères en ont par la suite été exclus. La valeur diagnostique dun test de D-dimères de plus de 500 mcg/L a été comparée à celle du test de référence (angioCT) afin de calculer la sensibilité, la spécificité et le rapport de vraisemblance négatif et leurs intervalles de confiance (IC). **Results:** Un total de 139 patients ont été inclus dans létude, parmi lesquels 12 (8,6%) souffraient dun SAA. La sensibilité dun test de D-dimères avec un seuil de positivité de 500 mcg/L était de 83,3% (IC 95% 51,6-97,9), la spécificité de 52,8% (IC 95% 47,8-66,4) et le VR- de 0,32 (IC 95% 0,09-1,13). Les deux patients pour qui le résultat du test de D-dimère était un faux négatif souffraient dun hématome intramural. Les sept patients avec un D-Dimères de plus de 4000 mcg/L semblaient souffrir dun diagnostic grave (dissection aortique : n = 5, liquide libre intra-abdominal avec état de choc : n = 1 et tamponnade cardiaque : n = 1). **Conclusion:** Avoir un test de D-dimères inférieur à 500 mcg/L ne permet pas déliminer un SAA, particulièrement un hématome intramural.
Keywords: syndrome aortique aigu, D-dimère, diagnostique

LO32

A RAPID bedside approach to ruling out acute aortic dissection

R. Ohle, MSc, MA, MB BCh, S. McIsaac, Med BA, MB, BCh, BAO, J. J. Perry, MD, MSc, Northern Ontario School of Medicine, Department of Emergency Medicine, Sudbury, ON

https://doi.org/10.1017/cem.2018.94 Published online by Cambridge University Press

Introduction: Acute aortic dissection (AAD) is a rare but fatal condition where over-investigation and missed diagnosis are common. Our objectives were to derive a highly sensitive clinical risk score for AAD and perform pilot validation. **Methods:** We started with two independent systemic reviews to firstly identify clinical variables associated with AAD and secondly to determine reasons for missed diagnosis. We searched Medline, Embase and the Cochrane database (1968-July 2016). Two reviewers screened articles and extracted data. Agreement was measured by Kappa and study quality by the QUADAS-2 tool. Bivariate random-effects meta-analyses (Revman 5 and SAS 9.3) were performed. Due to sampling bias found in the systematic reviews a matched case control study confirming the strength and direction of predictor variables was performed. The cases (2002-2014) included new emergency department (ED) or in-hospital diagnosis of non-traumatic AAD confirmed by computed tomography (CT). The controls (2010-2011) were a random age/sex matched sample of patients triaged with undifferentiated acute truncal pain (<14 days). Finally, we used the beta coefficients derived from multivariate logistic regression of our case control study to assign a numerical strength of association to predictor variables. To mitigate the bias inherent in case control studies we adjusted the beta coefficient for each variable by the diagnostic odds ratio calculated from each systematic review. Pilot validation was performed on a retrospective sample of all those undergoing CTA to rule out AAD at two tertiary care ED over 12 months. Two abstractors were blinded to the final diagnosis. **Results:** We derived a two-step risk score based on the derivation sample which included 4960 patients(Clinical variables systematic review -9 studies, N = 2400, low risk of bias, Kappa 0.9 & Reasons for missed diagnosis systematic review - 11 studies, N = 800, low-moderate risk of bias, Kappa 0.89 & Case control study -194 AAD, 776 Controls). Step one is a RAPID assessment for AAD 1) Risk factors 2) Alternative diagnosis in the differential that mimics AAD- ACS, PE, Stroke 3) Physical exam- hypotension, pulse deficit 4) Impression- clinical suspicion of AAD and 5) Discomfort-migrating, tearing, pleuritic, thunderclap, severe pain. If any of the above factors are present proceed to step two. Step two stratifies patients based on history (low, moderate, high suspicion), physical exam (hypotension/pulse deficit) and risk factors. In the pilot validation (N = 375,AAD = 16) sensitivity was 100% (95% CI 79.4-100) and specificity 36.5% (95% CI 31.5-41.7%). Patients were successfully stratified into low (<2, 0% AAD), moderate (2, 2.2% AAD), high (>2, 19.6% AAD) and critical probability (>3, 62.5% AAD), with up to 36% reduction in imaging. **Conclusion:** We derived a highly sensitive new clinical risk score with the potential to reduce missed cases of AAD, reduce unnecessary imaging and expedite care.
Keywords: aortic dissection, clinical decision rules

LO33

Do electrocardiogram rhythm findings predict cardiac activity during cardiac arrest? A SHoC series study

P. Atkinson, MB, BCh, BAO, MA, N. Beckett, BSc, D. Lewis, MBBS, A. Banerjee, MBBS, MSc, J. Fraser, BN, J. P. French, MB, BSc, Department of Emergency Medicine, Dalhousie University, Saint John, NB

Introduction: Electrocardiographic (ECG) rhythms are used during resuscitation (ACLS) to guide resuscitation, and often to determine futility. Survival rates to hospital discharge have been reported to be higher for patients with PEA than asystole in out-of-hospital cardiac arrest. This study examines how well the initial ECG cardiac rhythm represents actual cardiac activity as determined by point of care ultrasound (PoCUS). **Methods:** A database review was completed for patients arriving to a tertiary ED in asystole or PEA arrest, from 2010 to 2014. Patients under 19y or with a previous DNR were excluded. Patients were grouped into those with cardiac activity (PEA) and asystole on ECG; as well as whether cardiac activity was seen on PoCUS during the arrest. Data was analyzed for visualized cardiac activity on PoCUS. **Results:** 186 patients met the study criteria. Those with asystole on ECG were more likely to have no cardiac activity than those with PEA (Odds 7.21 for initial PoCUS; 5.45 for any PoCUS). The sensitivity of ECG rhythm was 80.49% and 82.12%, specificity was 77.91% and 54.28%, positive predictive value was 94.28% and 88.57%, and negative predictive value was 30.43% and 41.30% for cardiac activity on initial PoCUS and on any PoCUS respectively. The positive and negative likelihood ratios for ECG were 3.47 and 0.25 for activity on initial PoCUS. The positive and negative likelihood ratios for activity on any PoCUS were 1.78 and 0.33. **Conclusion:** Our results suggest that although most patients with asystole on ECG demonstrate no cardiac activity, a small number actually had activity on PoCUS. This supports the use of PoCUS during cardiac arrest, in addition to ECG, to identify patients with ongoing mechanical cardiac activity.
Keywords: cardiac arrest, resuscitation outcomes, electrocardiogram

LO34

Does utilization of an intubation safety checklist reduce dangerous omissions during simulated resuscitation scenarios?

C. Forristal, MD, K. Hayman, MD, MPH, N. Smith, MN, S. Mal, MD, M. Columbus, PhD, N. Farooki, MD, CM, S. McLeod, MSc, K. Van Aarsen, MSc, D. Ouellette, MD, Western University, London, ON

Introduction: One of the most high-risk tasks regularly performed by emergency medicine (EM) physicians is airway management. Many studies identify an increase in adverse events associated with airway management outside of the operating theatre. Errors of omission are the single most common human error type. To address this risk, the checklist is becoming a common pre-intubation tool. Simulation is a safe setting in which to study the implementation of a new airway checklist. The purpose of this study was to determine if a novel airway checklist decreases practitioners rates of omission of important tasks during simulated resuscitation scenarios. **Methods:** This was a dual-centre, randomized controlled trial of a novel airway checklist utilized by EM practitioners in a simulated environment. The 29-item peri-intubation checklist was derived by experienced EM practitioners following a review of airway checklists in published and gray literature. Participants were EM residents or EM physicians who work more than 20 hours/month in an emergency department. Volunteers were recruited from two academic health centres to complete three simulated scenarios (two requiring intubation, one cricothyroidotomy), and were randomized to either regular care or checklist use. A minimum of two assessors documented the number of omitted tasks deemed important in airway management and the time until definitive airway management. Discrepancies between assessors were resolved by single-assessor video review. **Results:** Fifty-four EM practitioners participated. There was no significant difference in baseline characteristics between the two study groups. The average percentage of omitted tasks over the three scenarios was 45.7% in the control group (n = 25) and 13.5% in the checklist group (n = 29) an absolute difference of 32.2% (95% CI: 27.8%, 36.6%). Time to intubation (normally distributed) was significantly longer in the checklist group for the first two scenarios (mean difference 114.10s, 95% CI: 48.21s, 179.98s and 76.34s, 95% CI:31.35s ,121.33s), but there was no statistical difference in the third scenario where cricothyroidotomy was required (mean difference 33.75s, 95% CI: -28.14s, 95.65s). **Conclusion:** In a simulated setting, use of an airway

https://doi.org/10.1017/cem.2018.94 Published online by Cambridge University Press