Resident Journal Review: May - June 2008

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This is a continuing column providing a brief look at journal articles pertinent to EM residents. It is not meant to be an extensive review of the articles, nor is it wholly comprehensive of all the literature published. Rather, it is a short list of potentially useful literature that the busy EM resident may have missed. Residents should read the articles themselves to draw their own conclusions. This edition will include articles published over a two month period, February through March 2008.

Bobrow BJ, Clark LL, Ewy GA, et al. Minimally interrupted cardiac resuscitation by emergency medical services for out-of-hospital cardiac arrest. JAMA 2008, 299 (10):1158-1165.

This prospective study based in Arizona evaluated Minimally Interrupted Cardiac Resuscitation (MICR) done by EMS personnel in the pre-hospital setting versus standard care. The main outcome measure was survival to hospital discharge.

MICR consisted of an initial series of 200 uninterrupted chest compressions, rhythm analysis with a single shock, 200 immediate post-shock chest compressions before pulse check or rhythm reanalysis, early administration of epinephrine and delayed endotracheal intubation.

The first analysis the authors looked at was the difference before and after MICR training. Survival to hospital discharge increased from 1.8% (4/218 patients) before MICR training to 5.4% (36/668 patients) after MIRC training with an odds ratio of 3.0 (95% CI 1.1-8.9). In the second analysis, authors evaluated MICR protocol compliance looking at patients that received MICR and those who did not. Survival to hospital discharge was significantly better among patients who received MICR (9.1%, 60/661 patients) than those who did not (3.8%, 69/1799 patients), with an odds ratio of 2.7 (95% CI 1.9-4.1). Results were even more impressive in the subgroup of patients with witnessed ventricular fibrillation in both analyses.

Authors concluded that survival to hospital discharge of patients with out-of-hospital cardiac arrest increased after implementation of MICR as an alternative to standard EMS protocol. This is a well-done and impressive study on a subject that is traditionally difficult to study. It reinforces the importance of uninterrupted chest compressions in cardiac arrest.

Russell JA, Walley KR, Singer J, Gordon AC, Hebert PC, Cooper DJ, et al. Vasopressin versus norepinephrine infusion in patients with septic shock. N Engl J Med. 2008 Feb 28;358(9):877-87.

This multicenter, randomized, double-blind trial looked at the use of the addition of low-dose vasopressin (0.01 to 0.03 U per minute) or norepinephrine (5 – 15 mcg per minute) in patients with septic shock already receiving open-label vasopressor agents. A total of 396 patients received vasopressin and 382 patients received norepinephrine. Patient characteristics were well matched.

The results of the primary outcome measure of 28-day mortality rates showed no significant difference between the vasopressin and norepinephrine group (35.4% and 39.3% respectively; p=0.26). There were also no significant differences in the overall rates of serious adverse events between the two groups (10.3% and 10.5%).

This study concluded that low-dose vasopressin did not reduce mortality rates as compared with norepinephrine in patients with septic shock who were already being treated with catecholamine vasopressors. It should be noted that the mean time of study entry to infusion of the drug was 12 hours, which may have placed patients outside the window of beneficial effects.

Walsh P, Caldwell J, McQuillan KK, et al. Comparison of nebulized epinephrine to albuterol in bronchiolitis. Acad Emerg Med 2008; 15:305-313.

In this two site, double-blind RCT, authors looked at children up to 18 months old with the clinical diagnosis of bronchiolitis who required treatment. Patients received either three doses of racemic albuterol or one dose of racemic epinephrine plus two saline nebulizers. The main outcome measure study was "successful discharge" defined as not requiring additional bronchodilators in the ED and not resulting in admission within 72 hours.

A total of 352 patients were given albuterol and 351 patients epinephrine. A total of 173 patients in the albuterol group and 160 patients in the epinephrine group were successfully discharged (RR = 1.0, 95% CI = 0.92 to 1.26). When authors adjusted for severity, they found a lower risk of admission with the use of nebulized racemic albuterol than with racemic epinephrine.

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Authors concluded that in children up to 18 months, ED treatment of bronchiolitis with nebulized albuterol led to more ED discharges than nebulized racemic epinephrine. One potential bias against epinephrine was that patients received albuterol closer to disposition decision. While this is the largest study evaluating these medications for bronchiolitis, it does contradict some other studies, so more RCTs need to be done to further evaluate the optimal ED treatment for bronchiolitis.

Brown L, Christian-Kopp S, Sherwin TS, et al. Adjunctive Atropine is Unnecessary During Ketamine Sedation in Children. Acad Emerg Med 2008; 15:314-318.

The use of adjunctive atropine is often recommended to mitigate hypersalivation caused by ketamine use in sedation.This prospective observational study evaluated ED pediatric patients receiving sedation with ketamine without adjunctive atropine and studied rates of excessive salivation and the frequency of airway complications.

A total of 947 (86.9%) sedations were performed without adjunctive atropine. 92% of these patients had no salivation, and only 1.3% (12 patients) had salivation scores > 50 mm. There were a total of three episodes of laryngospasm.

This study shows that excessive salivation is relatively uncommon, and the majority of pediatric sedations with ketamine do not require adjunctive atropine. However, this study was not blinded and there exists the possibility that adjunctive atropine may have beneficial effects to decrease hypersalivation. Furthermore, since the study was not blinded, patients with oropharyngeal procedures would be more likely to be excluded as physicians would have been more likely to use adjunctive atropine for these cases.

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the country. While dressed in full Hawaiian garb and drinking margaritas, those in attendance braved chilly weather and spent most of their time huddled in tight groups under the heat lamps. Prizes went to the best outfit, and an excellent time was had by everyone. I would like to extend a special thanks to John Wagner, Pepid President, for sponsoring the event and Janet Wilson, AAEM/RSA Executive Director, for all her help in the planning process. Overall, the 2008 SA was a successful event for the Education Committee, and we look forward to seeing everyone next year in Phoenix.

With the RSA elections decided, I plan on working with the incoming Education Committee Chair to ensure that the momentum we have generated this year continues. The top priorities for the remainder of my term are to begin planning an expanded second Annual AAEM/RSA Midwest Student Symposium and to start formulating ideas for the 2009 SA resident track. To help with this endeavor, those residents and students interested in planning educational and social activities are encouraged to join the committee and take an active role in shaping future events.