ABSTRACTS

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Role of complement activation in a model of adult respiratory distress syndrome. Hosea S, Brown B, Hammer C, et al, *J Clin Invest* **66**:375-382, 1980.

Adult respiratory distress syndrome is a state of altered pulmonary alveolar capillary permeability often seen with septic shock and other clinical disorders. The authors evaluated the role of complement activation in altering alveolar capillary permeability in an experimental model. Specifically, they studied the effect of induced bacteremia with accompanying complement activation on sequestration of microorganisms and leakage of albumin in the lungs of normal and complement-depleted guinea pigs and mice. Their results suggest that localization of intravenous bacteria to the pulmonary parenchyma requires both the activation of complement (C_5) and the presence of circulating polymorphonuclear leukocytes. This study may provide some rationale for the use of high dose corticosteroids, which are known to inhibit the membrane-altering effects of C_5 *in vitro*, because high levels of circulating C_5 have been detected in traumatized patients at risk of ARDS. ***(Editor's note:** ARDS is a complex multifactorial complication of major disease and injury, the most constant factor of which is sepsis. Therefore the rationale of giving a drug which decreases a capacity to respond to infection is questionable.)* Jim Winkler, MD

adult respiratory distress syndrome, complement activation

Clinical evaluation of a new device for the treatment of tension pneumothorax. Wayne MA, McSwain NE, *Ann Surg* **197**:760-762, 1980.

The "McSwain Dart" is a 16 Frenchy polyethylene catheter 15 cm in length which passes over a stylet into the thorax for the treatment of a pneumothorax. It is secured by a retractable winged flange flow of air. The authors describe their experience with this device in 40 patients with multiple trauma, treated either in the prehospital phase (22 patients) by EMT-paramedics or in the emergency department (18 patients). Details of the types of trauma, indications for insertion, and patient outcomes were not included. Re-expansion of the lung confirmed by radiography occurred to at least 70% in all patients, with the majority of patients showing 90% to 100% re-expansion. Autopsy confirmed nearly as good lung re-expansion in the seven deaths. None of the deaths was related to malfunction of the dart. The only complications were a small laceration in the dome of the diaphragm and a small hemothorax from an intercostal artery puncture. The authors think the device can adequately treat tension pneumothorax and most simple pneumothoraces, and that it can be safely and efficiently inserted by physicians and EMT-paramedics. ***(Editor's note:** The need for this device in the prehospital phase has not been clearly established. The fact that the diagnosis of pneumothorax was made on clinical grounds certainly detracts from the validity of the paper. Additionally, traumatic pneumothorax is usually associated with a hemothorax, a condition not amenable to the dart. A simple pneumothorax may be tolerated until the patient arrives in the emergency department for definitive management. Use of the device in the prehospital setting depends on the clinical status of the patient.)* Kevin Smith, DO

catheterization, McSwain Dart, for tension pneumothorax; McSwain Dart, tension pneumothorax; pneumothorax, catheterization, McSwain Dart

Ectopic pregnancy: a five-year experience. Powers DN, *South Med J* **73**:1012-1015, 1980.

A retrospective study over a five-year period revealed 204 ectopic pregnancies in 23,256 deliveries (0.8%). Only 27 (13.2%) had a history of salpingitis, but chronic salpingitis was evident in 91 patients (44.6%) at surgery. Twenty-one patients (10.3%) had an IUD *in situ* when diagnosed. Most frequent presenting symptoms included abdominal pain (95.1%), amenorrhea (73.7%), and abnormal uterine bleeding (63.7%). Culdocentesis was performed in 91 patients and was positive (non-clotting blood) in 75 (82.4%). Immunologic pregnancy tests of either the two-hour type or the two-minute slide type were performed on 138 patients and were positive in 112, for a combined positivity rate of 81.2%. Correct diagnosis was made on admission in 77.5%, well within the range stated in the literature (53.5% to 94.8%). The authors think culdocentesis remains the most useful diagnostic tool and urge prompt surgical intervention. ***(Editor's note:** This can still be an extraordinarily difficult diagnosis to make. A useful clue has been the presence of anemia with no corresponding history of menorr-metrorrhagia.)* David J. Vukich, MD

ectopic pregnancy; pregnancy, ectopic

The effects of bicarbonate on blood coagulation. Wong DW, Mishkin FS, Tanaka TT, *JAMA* **244**:61-62, 1980.

The pH, prothrombin time, and thrombin clotting time for whole blood were measured *in vitro* after various amounts of sodium bicarbonate were added. The quantities of sodium bicarbonate used were calculated to give the same concentration as the administration of 1:10 mEq/kg to a patient. Potassium bicarbonate and sodium chloride were used in equimolar concentrations as controls. The pH rose from 7.6 to 8.0 as the concentration of potassium bicarbonate was increased from 0 to 0.1 mEq/ml; from 7.4 to 7.7 as the concentration of sodium bicarbonate was increased from 0 to 0.12 mEq/ml. The pH did not change with the addition of sodium chloride. Thrombin clotting time rose from a baseline of eight seconds as stronger concentrations of all salts were added. It was prolonged to 44 sec with 0.09 mEq/ml of potassium bicarbonate; to 32 sec with 0.12 mEq/ml of sodium bicarbonate; and to 18 sec with 0.17 mEq/ml of sodium chloride. As 0.17 mEq/ml of sodium chloride was added, protime increased from 11 sec as 0.10 mEq/ml of potassium bicarbonate was added. Blood pH,

prothrombin time, partial thromboplastin time, carbon dioxide tension, and bicarbonate were measured in four patients before and after they received an intravenous bolus or infusion of sodium bicarbonate. Although the blood pH rose in only two cases, the protime and partial thromboplastin time increased in all patients. ***(Editor's note:*** *The clinical significance of these observations of prolonged clotting times is unknown. They probably are not significant since bleed diatheses are not reported as frequent problems in patients treated with intravenous bicarbonate. One should look for prolonged clotting times in patients who have received extraordinary amounts of sodium bicarbonate.)* Carin Olson, MD

bicarbonate, effect on blood coagulation; blood, coagulation, effect of bicarbonate

Generation of suppressor cells in mice after surgical trauma. Wang BS, Heacock EH, Wu AVO, et al, *J Clin Invest* **66**:200-209, 1980.

Trauma is often followed by a loss of immunocompetency as seen in impaired cell-mediated immunity and decreased phagocytic capability of macrophages and neutrophils. This phenomenon may contribute to morbidity from infectious complications. The authors used an animal model to study the immunologic response of splenocytes following trauma. The diminished immunocompetency detected from two hours to six hours after surgical trauma suggests the existence of suppressor cells, presumably macrophages. These results further suggest that suppressor cells may play a role in the immunodeficiency of traumatized patients, thereby related to an increased susceptibility to life-threatening sepsis. ***(Editor's note:*** *It is an interesting piece of experimental evidence to support the notion that we should be taking more rather than fewer precautions with sterile technique on traumatized patients. Unfortunately in the heat of battle we frequently become very sloppy in this regard.)* Jim Winkler, MD

immunocompetency; suppressor cells; trauma, immunocompetency, suppressor cells

Single dose amoxicillin therapy for urinary tract infection. Rubin RH, *JAMA* **244**:561-564, 1980.

In a multicenter trial of the treatment of acute uncomplicated urinary tract infections, 134 women were tested for antibody coated bacteria (ACB) and randomized to the following therapies: single 3-gm oral dose of amoxicillin trihydrate or 10-day courses of sulfamethoxazole-trimethoprim (double strength 800 mg/160 mg b.i.d.) or oral ampicillin sodium (500 mg q.i.d.). Patients with subsequent ACB-positive assays (32.1%) were recultured after 48 hr to 72 hr and, if still culture-positive (66.6%), were treated with amoxicillin (500 mg t.i.d.) for 14 days. Patients with resistant bacteria were excluded from the study. Comparable results were obtained with the three regimens: single dose amoxicillin eradicating 90% of the original organism, sulfamethoxazole-trimethoprim curing 100%, and ampicillin, 96%. Side effects, including diarrhea, vaginal candidiasis, and dermatitis, with the various regimens were lower with the single dose (3.8%) than with sulfamethoxazole trimethoprim (33.3%) or ampicillin (38%). At the three medical centers ACB positivity varied: Massachusetts General Hospital (representing a mixture of emergency ward patients and prepaying employees) had 31%, Parkland Memorial Hospital in Dallas (all emergency ward patients) had 63%; and the Portland, Oregon Kaiser-Permanente Health Program (all prepaying individuals) had 8%. The incidence of positivity correlated inversely with the ease of access to medical care. Single dose is an effective, inexpensive, fast form of therapy with markedly fewer side effects which, in addition, may serve as a diagnostic modality with failures requiring more extensive evaluation. ***(Editor's note:*** *Patient compliance is a poorly understood phenomenon. Whatever its factors it is clear that the fewer the necessary doses and the shorter the treatment schedule, the greater the compliance. It would be of interest to know what compliance was in the longer treatment groups.)* Jon G. Kastendieck, MD

drug therapy, amoxicillin, for urinary tract infection; urinary tract infection, amoxicillin

The evolution of abdominal stab wound management. Thompson JS, Moore EE, Duzer-Moore S, et al, *J Trauma* **20**:478-484, 1980.

The most appropriate management of the patient with an abdominal stab wound is a subject which continues to be surrounded by controversy. The authors both review the current literature and report their own experience to generate a rational approach to this entity. Over a five-year period, 300 patients were treated for abdominal stab wounds. Of the 300, 27 patients were noted to have unexplained blood loss, evidence of peritoneal irritation, or omental evisceration. These were considered mandatory criteria for immediate exploration. The remaining 273 patients were placed into the protocol in existence at that time. The initial protocol utilized sinography to diagnose peritoneal penetration in 27 patients. Of the 16 positive, only seven patients had significant injuries at laparotomy, a false positive rate of 56%. There was one false negative (9%). Subsequently, 92 patients were serially observed "for the development of peritoneal signs indicative of visceral injury." Of the 39 patients on whom laparotomy was eventually performed, 14 had either insignificant or no visceral trauma, a false positive rate of 36%. Most recently, the authors have used local wound exploration to determine the need for peritoneal lavage. Among the 154 patients in this group, 97 had negative local wound explorations and were discharged from the emergency department without subsequent complication. The 57 remaining patients underwent a diagnostic peritoneal lavage, and 25 of these required laparotomy. Only two of these 25 patients had insignificant or no visceral injury, a false positive rate of 8%. ***(Editor's note:*** *Local exploration appears to be the procedure of choice. The authors used this procedure to determine which patients would receive peritoneal lavage. Of 57 patients receiving peritoneal lavage 25 had positive results and were operated on with a false positive rate of 8%. More importantly, two of five patients (40%) with weakly positive lavages later required surgery after developing peritoneal signs, as did one of 30 (3%) of the patients with negative lavages. Considering the low morbidity and mortality of negative laparotomy, positive local wound exploration should be followed by laparotomy, not by peritoneal lavage.)* Robert Strauss, MD

wound, abdominal stab, management

Pulmonary tuberculosis in children. Lowe JE, Daniel TM, Rider C, et al, *J Thorac Cardiovasc Surg* **80**:221-224, 1980.

The authors reviewed 140 cases of pulmonary TB in children (< 16 years old) and note that the incidence of surgical intervention was only 1.4%. This compares to an incidence of 5% in the last series of children with pulmonary TB in 1967. It was thought this was due to a declining incidence of pulmonary TB in children along with better medical compliance and effectiveness of drug therapy. Unilateral and/or bilateral hilar or paratracheal adenopathy with an associated small parenchymal infiltrate is the most common presentation for children. Less commonly, the presentation may be a mass or large infiltrate with or without visible adenopathy and often with little associated clinical illness. ***(Editor's note:*** *According to this report neonatal TB presents as disseminated pulmonary disease. Miliary TB may also be seen in childhood. Chronic TB may present as the adult form of the disease with potential presentation of apical or cavitary lesion.)* John Tucker, MD

pediatrics, pulmonary tuberculosis; pulmonary tuberculosis, pediatric; tuberculosis, pulmonary, pediatric