The Haiti Experience

The Haiti Experience By: Mark Baker M.D.

The events in Haiti earlier this year touched the hearts of so many of us. I, for one, was glued to the television...listening...watching. But, some put their lives and fears on hold to go and do something. Here is the story of the pediatric emergency medicine experience in Haiti by one of our very own...Mark Baker.

A simplified version of the definition of a disaster states that disasters occur whenever need exceeds available resources. The January 12th earthquake in Haiti met that definition as the need for medical care overwhelmed the local health and response infrastructure of the hemisphere’s poorest country, creating one of the worst disasters in recent history. Casualty estimates vary widely, however official Haitian reports indicate that there were 230,000 deaths, 500,000 injured, and 3 million people internally displaced following the quake, and long term effects will continue for years.1

Governments and aid agencies from around the world mounted an unprecedented response to the tragedy. Included in the response were members of state-based, federal Disaster Medical Assistance Teams (DMAT). DMAT members are paid volunteers working for the National Disaster Medical System (NDMS), a component of the Department of Health and Human Services. I responded with members of my local team (Alabama-1), as well as members from Florida-4.

The American response, both governmental and private, was among the finest efforts of our country.2

Following news of the earthquake and President Obama’s pledge to extend the full resources of the U.S. government, I felt certain that the NDMS would be activated for the response. I felt a combination of anticipation and anxiety as I scrambled to arrange for coverage of my emergency department shifts, in anticipation of deployment. I wanted to be in Haiti immediately, but knew that important groundwork was occurring to ensure safe and successful operations for medical responders. I arrived in Haiti 11 days after the earthquake with members of the Florida-4 DMAT, deploying to the Petionville Golf Course in suburban Port-au-Prince where the U.S. 82nd Airborne Division had established a forward operating base. Members of DMATs from California and New Jersey had arrived several days earlier to set up a field hospital to treat patients with earthquake injuries, and to support the 50,000 internally displaced persons who were living on Haiti’s only golf course. In addition, strike teams were formed to provide medical care to the surrounding districts of Port-au-Prince and search for victims unable to travel to a medical station.

The gravity of the disaster was apparent from the moment our plane landed in Port-au-Prince. It appeared that most buildings in the capital were visibly damaged, and approximately one in 10 buildings were completely destroyed. Without exception, every Haitian that I spoke with had a family member who died in the disaster. Children described losing parents and classmates, and having schools and homes ruined. The sense of loss and grief was pervasive.

1 Haiti raises earthquake toll to 230,000. Washington Post. 10 February, 2010.

2 The American response, both governmental and private, was among the finest efforts of our country.
Hello faithful readers! I hope this finds you all enjoying 2010. It’s hard to believe school is back in session and soon, football season will be upon us again. I want to take this opportunity to apologize for the amount of time that has passed since the last issue of The Polhill Report (because I’m sure you have all been waiting anxiously by your mailboxes…). The Spring and Summer editions have been combined into one double issue for your reading pleasure. If there are topics or issues that you would like to read more about, please let me know and I will incorporate it into future issues.

Again, thank you for your loyalty, and I hope you enjoy!

---

**Emerging Battery-Ingestion Hazard: Clinical Implications**


When I see foreign body ingestion as a chief complaint, usually I relax a little...if it is in the esophagus, call surgery. If it is in the stomach, this too shall pass. But with the development of more and more sophisticated toys and games, there has been an increase in the use of button or disc batteries. Now, something that seemed to be reserved for watches or hearing aids, has become much more easily accessible...and swallowable. Do we need to treat these patients differently? The short answer to that is...maybe.

Data from three different databases was reviewed with the following observations noted:

- Ingestion of 20– to 25– mm diameter and lithium cells increased significantly
- Outcomes were worse for:
  - Larger diameter cells (≥ 20mm)
  - Children younger than 4 years of age
- Over half of fatal outcomes were initially misdiagnosed

Historically, ingestion of most foreign bodies (including batteries) has not led to significant morbidity and mortality, and that statement still holds true. But, when do we need to be more diligent and strict about follow-up? The authors make the following recommendations:

- **Known battery ingestion requires an urgent radiograph, unless it is known the battery is ≤ 12 mm in diameter, and the patient is older than 12 years of age (not sure why 12 is the cutoff...)**
- If the patient is > 12 years of age, the battery is known to be ≤ 12 mm and all of the following conditions are met:
  - Patient is completely asymptomatic, and has been since time of ingestion
  - Only one battery was ingested, and there was no co-ingestion with a magnet
  - No pre-existing esophageal disease
  - Reliable and competent caregiver,
    you could consider close monitoring (although I think I would still get a film)
- If an x-ray reveals a battery in the esophagus, it should be urgently removed (as burns can occur within 2 hours)
- If an x-ray reveals a battery in the stomach and the patient is asymptomatic, a follow-up x-ray should be performed in 3-4 days. If the battery is still in the stomach, it should be removed at that time.
- If a battery is in the stomach, but the patient is symptomatic, it should be removed
- Inducing vomiting or using cathartics are ineffective

Batteries can look almost identical to coins in radiographs, so look closely for a double rim effect, or consider getting a lateral view if there is any question. **As a point of reference, a penny is 19 mm in diameter, so anything battery bigger than that should increase your level of urgency. Just one more thing we can thank the electronic age for...**
Lack of Predictive Value of Tachypnea in the Diagnosis of Pneumonia in Children

There are several reasons a child can be tachypneic—fever, fear, acidosis. And we have all been fooled by a physical exam—how many times have we seen an abnormal x-ray and gone back and listened, still not able to hear what you see? We rely often times on persistent tachypnea as a reason to investigate further. But, should we?

This group took a prospective look at children < 5 years of age undergoing chest radiography to evaluate for pneumonia. They used three main measurement scales for respiratory rate: mean triage respiratory rate by age group, age based WHO guidelines*, and physician subjective clinical assessment prior to x-ray. The diagnosis of pneumonia was determined by a pediatric radiologist.

Of the 1622 patients enrolled, the majority were between the ages of 1 and 5 years (62%). A total of 235 patients (14.5%) had a radiographic pneumonia. Using the WHO guidelines for tachypnea, those < 2 months of age and those between 1 and 5 years of age had a significantly higher proportion of pneumonia. There was no statistical difference in the patients subjectively felt to be tachypneic by the treating physician. This finding was consistent in the patients who had pneumonia without wheezing as well.

I guess that means I should get a watch with a second hand...

---

Bacterial Enteritis as a Risk Factor for Childhood Intussusception: A Retrospective Cohort Study

Intussusception is a not uncommon pediatric malady, classically seen between the ages of 3 months and 12 months. There have been certain scenarios associated with an increased risk of intussusception, including HSP and rotavirus vaccine. Adenovirus has been the most widely studied infection, but cases have also been reported with several other viral and bacterial infections. This study assessed the relationship between specific pathogens and the rate of intussusception.

Retrospectively, there were over 387,000 patients in the data bank. In the 1412 cases of bacterial enteritis, there were 37 cases of intussusception (12.6% of all intussusceptions (n=293)), representing a 35-fold increase in the absolute risk from baseline. In the 37 cases of intussusception:

- 16 followed infections with Salmonella
- 13 followed infections with E coli
- 6 followed infections with Shigella
- 2 followed infections with Campylobacter

The time period between the episode of enteritis and the development of intussusception ranged from 1 to 175 days, with a cluster in the 2-3 weeks after diagnosis. When separating patients with intussusception into 2 age groups (< 1 year of age, and 1-5 years of age), there was an increase in absolute risk of 2.3% in the < 1 year of age and 3.3% in the 1-5 year age group, being consistent with the literature stating that older children with intussusception are more likely to have a lead point or other pathologic cause. Just something to keep in mind...

*WHO Defined Tachypnea*

- < 2 months: RR ≥ 60 bpm
- 2-12 months: RR ≥ 50 bpm
- 1-5 years: RR ≥ 40 bpm
The Haitians were the first responders to this disaster and will be there working on the recovery long after foreign aid agencies have gone. The assistance provided by our Creole translators proved invaluable. Several translators working with our team were members of the U.S. Public Health Service who left work in the states in order to serve their people during the crisis. Others left their jobs in Haiti to help with the response. I was struck by the willingness of these brave people to serve as guides to the city and cultural informants during a time of great personal and national tragedy. Their eagerness to help was inspiring.

The medical issues were consistent with what one would expect from a disaster of this magnitude. Soft tissue and orthopedic injuries predominated during the early response phase, with extremity and pelvic fracture prevailing in children. As late as 2 weeks following the earthquake, children were presenting with spinal cord injuries and pelvic fractures requiring transfer for operative stabilization. Wound infections were common. Wound debridement and fracture reduction were facilitated with morphine and ketamine. Treatment was empirical, since laboratory services were unavailable. Few patients were tetanus immune, and tetanus immunoglobulin was unavailable.

Approximately 2 weeks after the quake, the number of patients presenting for treatment at our field hospital began to decline and a shift was seen in presenting complaints. Orthopedic injuries began to wane and more acute infections were seen. Children presented for respiratory complaints and febrile illnesses, management of which was complicated by low rates of immunization. Dehydration was the rule, and frequently required intravenous fluid resuscitation for infants and young children. Conditions in the camps for internally displaced people were universally crowded, hot and dusty, while cooking fires in close proximity to tents resulted in burns and exacerbations of asthma. Groups of children and parents presented for treatment of scabies. I will never forget taking care of a 4 year old boy with chronic malnutrition who was brought in from the IDP camp by neighbors who felt that he was abandoned. It took a team effort to overcome the language and cultural barriers in order to locate his birth mother and transfer him for nutritional support.

Medical conditions present prior to the quake continued in the aftermath of the disaster. We saw many patients following accidents and motor vehicular trauma, while chronic conditions such as diabetes, chest pain, and cancer continued to present for treatment. Several patients with suspected tuberculous adenitis presented for care. Diseases that had almost been eliminated from the U.S. such as neonatal tetanus were seen. In addition there were over a half dozen births in our field hospital during the two week period I served.

Resources during the first part of my two week deployment were scarce. Drinking water was limited, and was unavailable except to those patients showing signs of dehydration. Antibiotics and wound care supplies were generally sufficient, and disposable gloves were reused following use of alcohol based hand sanitizer. The 82nd Airborne had established a food distribution system for the Petionville Golf IDP camp in conjunction with several non-governmental agencies that helped to avert a food crisis. Towards the end of my deployment, the supply chain had improved and we had sufficient resources including purified water. Medical technology was also virtually non-existent. Ultrasound was the only imaging technique available at our field station however proved extremely useful for a wide range of applications including musculoskeletal, trauma, and obstetrical complaints.

Working in a disaster area entails some hardship, but the hardship was outweighed by the satisfaction from helping people in need. We slept out in the open air on cots set out on the tennis courts of the Petionville Club and ate Meals Ready to Eat (MRE’s). Actor Sean Penn was camped near-by on the same courts with members of J/P HRO, an aid organization he formed for Haitian relief. The wide-ranging international response to this disaster was heartening and could serve as a model for future international coordination during large scale humanitarian disasters. Members of an Israeli disaster relief agency, Catholic Social Services and International Medical Corps were all working out of the Petionville site. During strike team missions we encountered members of the Columbian military providing food and security to on the cities many IDP camps.
The U.S. military played the principle role in facilitating the international response to the Haitian earthquake. They secured the Port-au-Prince airport, opening supply lines and channeling relief to those in need. The military provided the security and transportation for medical strike teams to travel safely throughout the devastated city and to transfer patients for higher level care. Several times daily, military helicopters landed near our field hospital to transport patients to the Comfort Ship, a floating hospital operated by the Navy.

During my training in pediatric emergency medicine, I had the opportunity to take several graduate level courses in emergency management. This training, along with knowledge of the incident command system, gave me a greater appreciation for the response efforts that were occurring during my deployment in Haiti. I would strongly recommend basic incident command training for all emergency physicians, even those without a desire to be a disaster responder.

The earthquake in Haiti was a tragedy of immense proportions, and one that I still have a difficult time grasping. The American response, both governmental and private, was among the finest efforts of our country. I am very proud to have been able to take part in it. The recovery from this disaster will take decades, and I encourage all my pediatric and emergency medicine colleagues to help if they can.

Each year, in honor of Rud Polhill’s insatiable thirst for learning and passion for education, the pediatric emergency medicine division awards a pediatric intern and an emergency medicine resident with the Rud Polhill award. These people are chosen for their “Rud-like” enthusiasm and dedication to the care of sick and injured children, as well as lifelong learning. This year’s recipients had an abundance of all of the above. Please join me in congratulating Haley Polhill M.D. (pediatrics) and Todd Peterson M.D. (emergency medicine) on this well deserved honor!
2010 proved to be another successful year in the fight against childhood obesity. The 4th annual Spring Scramble was a hit! Not only did many participants finish the race, but funds were raised for several children to attend camps sponsored by the weight management clinic...and a great time was had by all! Start training now, and we hope to see you next Spring!
Emergency Management of Pediatric Skin and Soft Tissue Infections in the Community-associated Methicillin-resistant Staphylococcus aureus Era

When a new resident starts in the ED, I try to tell them to not get frustrated by the fact that my approach to a particular problem may be completely different from one of my colleagues. There are several different ways to approach many of the common problems we see, and sometimes I will take an informal poll of my partners to see how they are tackling a certain issue, and soft tissue infections is one of the ones that sparks the most discussion.

This study surveyed pediatric emergency medicine physicians on their practices with cellulitis and abscesses. Here are the highlights:
- Almost one-quarter of physicians were unaware of the current prevalence of CA-MRSA in their community (I’m slightly embarrassed to say I am one of them)
- Clindamycin is most often first line for cellulitis, and trimethoprim-sulfamethoxazole for abscesses
- The decision to incise and drain an abscess was affected most by presence of spontaneous purulent drainage
- 75% preferred using procedural sedation for drainage
- 94% of respondents prescribed antibiotics after incision and drainage of a skin abscess, with presence of fever and surrounding cellulitis being the most common contributing factors

We use anecdotal evidence many times when treating a soft tissue skin infection. The questions that come to mind for me are:
1. **What if it’s not CA-MRSA?** I’m certainly not covering for the forgotten strep…
2. **Do I need to give antibiotics after I&D**, or am I just treating myself? And creating more resistance as an added bonus…

To be continued...

Randomized, Controlled Trial of Antibiotics in the Management of Community-acquired Skin Abscesses in the Pediatric Patient

To try and answer the “Do I need to give antibiotics after I&D” question, this double-blind, randomized, controlled trial compared treating children who had undergone I&D with trimethoprim-sulfamethoxazole vs. placebo. The primary outcome measured was treatment failure, with a secondary outcome of development of new lesions in the subsequent 90 days.

Recruited by convenience sample, 149 patients aged 3 months to 18 years were enrolled. Study groups were comparable in baseline characteristics, including size and location of abscess, as well as choice of anesthesia (local vs. procedural sedation).

The overwhelming majority of their infections were due to CA-MRSA (80%). Interestingly, at the 10 day follow-up, 26% of the placebo group and 13% of the antibiotic group developed new lesions, but there was no difference in development of lesions at the 3 month follow-up. Management of the new lesions at 10 days were as follows:

<table>
<thead>
<tr>
<th>Management</th>
<th>Placebo</th>
<th>Antibiotic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous drainage</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I&amp;D (+/- abx)</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Bleach bath</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>IV abx</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Expressed</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Self resolved</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Warm compresses</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Oral abx</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The authors conclude that the majority of abscesses that are incised and drained will heal without the use of antibiotics, thereby decreasing cost, risk for adverse events related to antibiotic administration, and potential development of resistance. The question of prevention of new lesion development, however, still needs to be addressed. Anyone got any free time?
So, I was checking my e-mail the other day, and I saw a message from the American Board of Pediatrics with “You Have a Certificate Expiring in 2011” in the subject line. Once that slight feeling of panic passed, I opened the message and started to try and wade through the maintenance certification (MOC) materials...wow.

Signing on to the ABP website proved challenging enough for me, since the sign on code was assigned by them and consists of a portion of my first and last names, but not something that seemed completely logical. Luckily, I had written down the information in a very safe place...which I couldn't find...so after they re-sent me my log in information, I was on my way.

There are four parts to the MOC process: (which began in 2003):

1. Professional Standing
2. Lifelong Learning
3. Cognitive Expertise
4. Performance in Practice

Each of these four parts assesses one or more of the six core competencies that the Accreditation Council for the Graduate Medical Education and American Board of Medical Specialties have agreed a physician must demonstrate:

- Patient care
- Medical knowledge
- Practice based learning and improvement
- Interpersonal communication and skills
- Professionalism
- Systems based practice

Breaking down the four parts in more detail:

1. Professional standing: you must have a valid, unrestricted license
2. Lifelong learning: designed to enhance clinical knowledge and practice skills, there are self assessment exercises available in the categories of knowledge, decision skills, and subspecialty. There are lists of approved exercises that may be completed (for CME credit) on your ABP portfolio. Depending on the sponsor of the activity, there may be an extra fee applied. There may be a minimum passing score depending on the exercise.
3. Cognitive expertise: this is when you get to go to a testing center and take that half-day test. Fun.
4. Performance in practice: this involves quality improvement projects (for which there is also a list of approved possibilities, both hands on and web based. In the future (I'm not sure when), patient surveys will also be a part of this.

You will be required to complete a (part 2) self-assessment and a (part 4) QI/web based module. The latter of the 2 looks like it could be a little time consuming, but I haven't gotten that far yet. You have to complete both of those parts before it will let you move on to scheduling (and paying for) your certifying exam.

The cycle for the certifying exam will change to every 10 years...but you will be required to complete the professional standing, knowledge assessment, and performance in practice components every 5 years. The “annual” cost for the program is around $200.00...but expect to pay about a grand every 5 years.

Not everyone is in favor of this process, but for now, it is what it is. I’ll let you know how my journey ends.

References:
- www.abp.org.
Distinguishing Between Bacterial and Aseptic Meningitis in Children: European Comparison of Two Clinical Decision Rules

There are several approaches to the child who presents with symptoms that might concern you for meningitis...and if you were to randomly poll our faculty, you would probably get them all. But, when you have spinal fluid results with pleocytosis, is there a way to reliably decide if it is viral or not? There have been decision rules proposed in the past, but there will still some cases missed, and even one missed case is too many.

This study took a retrospective look at a previously studied cohort of patients admitted with either bacterial or aseptic meningitis. To these patients, they applied the criteria of both the bacterial meningitis score and the meningitest (shown in the table below). In a previous validation study, the bacterial meningitis score missed ~3% of patients, when treating patients that were + for ≥ 2 criteria.

What they found was that both scores had 100% sensitivity (correctly identifying all the patients with bacterial meningitis). However, the specificity of the bacterial meningitis score showed higher specificity than the meningitest (if you use the meningitest, you are going to hospitalize and administer antibiotics to more patients with aseptic meningitis).

I find in my practice, that all these decision rules are helpful, but there is so much more that goes into this decision including reliability of follow-up, transportation, and (probably most significant) experience. I guess that’s why they call it the practice of medicine.

<table>
<thead>
<tr>
<th>Exclusion Criteria</th>
<th>Bacterial Meningitis Score</th>
<th>Meningitest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common</td>
<td>Known neurosurgical history or immunosuppression, pretreatment with antibiotics, septic shock, bloody spinal fluid secondary to traumatic tap</td>
<td>+ CSF gram stain</td>
</tr>
<tr>
<td>Unique</td>
<td>Purpura</td>
<td>+ CSF gram stain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Bacterial Meningitis Score</th>
<th>Meningitest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical</td>
<td>Seizure</td>
<td>Seizure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Purpura</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toxic appearance*</td>
</tr>
<tr>
<td>Biological</td>
<td>+ CSF gram stain</td>
<td>+ CSF gram stain</td>
</tr>
<tr>
<td>CSF protein ≥ 80 mg/dL</td>
<td>CSF protein ≥ 50 mg/dL</td>
<td></td>
</tr>
<tr>
<td>CSF ANC ≥ 1000 cells/mm3</td>
<td>Procalcitonin ≥ 0.5 ng/mL</td>
<td></td>
</tr>
<tr>
<td>Peripheral ANC ≥ 10,000 cells/mm3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Irritability, lethargy, delayed capillary refill

For either score, treat if ≥ 1 criterion present
The Polhill Report

Volume 6 • Issue 1 • Spring/Summer 2010

Interesting Case:
The Value of a Unifying Diagnosis

CC: Cough, chest pain, and mouth sores

HPI: 13-year-old African American male in his usual state of health until 9 days prior to presentation when he developed fever to 102.9°F, myalgias, headache, fatigue, and coughing. He was evaluated at a community urgent care center 5 days before presentation where he was diagnosed with “walking pneumonia” based on a positive monospot. He was treated with an injection of ceftriaxone and discharged home on clarithromycin and acetaminophen as needed. A rapid strep was performed which was negative, however, a chest x-ray was not done at that time.

After completing three days of clarithromycin, the patient had defervesced, but he was now complaining of painful sores in his mouth. He returned to the urgent care center one day prior to presentation where he was diagnosed with an allergic reaction. He was told to stop the clarithromycin and was given a prescription for diphenhydramine.

Later that same day, the patient decided to come to the emergency room due to sharp, non-radiating, substernal chest pain. He said it was worse with swallowing, eating, drinking, and deep breaths. There were no alleviating factors. In addition to the sores in his mouth, he noticed one bump on the skin of his right shoulder. Based on the development of new symptoms, an EKG was obtained which was normal. He was diagnosed with a lingular pneumonia based on a chest radiograph and discharged on amoxicillin. A secondary diagnosis of ulcerative stomatitis was also given. The patient was instructed to follow up with his primary care physician the next day.

Despite three prior medical evaluations, the patient returned to our emergency department the following day with worsening symptoms. On review of systems, the patient had nonproductive cough, chest pain, multiple mouth sores, scattered small bumps on his skin, and decreased oral intake secondary to the mouth pain. There was no fever, headache, shortness of breath, vomiting, diarrhea, abdominal pain, dysuria, myalgias, or arthralgias.

Kimberly Gran MD
Fellow, Pediatric Emergency Medicine

PMH/PSH: eczema; no previous hospitalizations or surgeries other than circumcision

ALL: NKA

Immu: UTD with the exception of varicella, and he had not had the illness as a child

Social history: No recent travel, sick contacts, or insect bites. The patient denied any current or past sexual history, drugs, and alcohol.

PE: T 98°F HR 68 RR 20 BP 121/70 Room air oxygen saturation 99% Pain score 1/5

Gen: Well-developed African American male, who was uncomfortable but non-toxic appearing.

HEENT: Moist mucous membranes with white gray ulcerations and some sloughing on his lips, gingiva, and buccal mucosa. There were several blisters on his swollen lips. No lesions were noted in the posterior oropharynx or tongue. The patient had no lymphadenopathy or conjunctivitis
Chest: Clear to auscultation without increased work of breathing.

CV: Regular rate and rhythm. There were no murmurs, rubs, or gallops.

Abd: Soft and non-tender without hepatosplenomegaly.

Ext: Warm with brisk capillary refill.

Neuro: Cranial nerves intact; otherwise nonfocal, without and sensory or motor deficit.

Skin: 15 scattered erythematous papules on his trunk and around his ankles. Two of the lesions appeared to have concentric rings of inner dark crusting surrounded by a pale area then outlying erythema.

The rash spared the palms and soles. The rash on the body was generally unimpressive, however, on genital exam, there were five discrete umbilicated papules on the scrotum, as well as several flesh colored papules on the shaft, corona, and glans penis. There was no mucosal involvement of the urethra or anus. There was no urethral discharge.

ED COURSE:

A differential included erythema multiforme (EM), Stevens-Johnson syndrome (SJ), toxic epidermal necrolysis (TEN), fixed drug reaction, herpes simplex virus (HSV), and varicella-zoster virus (VZV). The patient was admitted to the hospital for pain control, hydration, and further workup including a dermatology consult. He was switched from amoxicillin to cefotaxime to treat his lingular pneumonia. He was started on IV fluids and was treated with magic mouthwash, morphine, and acetaminophen/hydrocodone for worsening pain. Laboratory studies sent included a complete blood count (CBC), basic metabolic profile (BMP), HSV PCR, and VZV PCR. The CBC and BMP were within normal limits and the PCR results were negative.

Biopsy results revealed vacuolar interface dermatitis with necrotic subepidermal bullae formation. The presence of eosinophils within the inflammatory infiltrate suggested that antibiotics played a role in the etiology of this lesion.
DISCUSSION:

The patient was diagnosed with erythema multiforme based on the history, physical examination, laboratory results, biopsy findings, and dermatology consultation.

In the past, erythema multiforme (EM) was thought to be a mild disease along a continuum of skin disorders including Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN). However, it is now thought that EM minor and major are distinct entities from SJS and TEN. Factors which help distinguish EM minor and major from SJS and TEN are:

- Etiology
- Pathology
- Degree of mucosal involvement
- Presence of a classic rash
- Degree of epidermal detachment
- Degree of multisystem involvement
- Morbidity and mortality

The annual incidence of EM is unknown but has been estimated between 0.01 and 1%. The incidences of SJS and TEN are better characterized, and have been estimated at 0.4 to 1.2 and 1.2 to 6 per million person years, respectively.

Many factors have been implicated in the etiology, including infectious agents and drugs, however no causative agent can be found in up to 50% of cases. In children, herpes simplex, upper respiratory infections, and mycoplasma pneumonia have been associated with EM and SJS. More than 100 drugs have been associated with EM, SJS and TEN, with sulfonamides, macrolides, hydantoins, non-steroidal anti-inflammatory drugs and penicillins most commonly involved. A possible confounding factor is that patients are often given antibiotics for an infection, making it difficult to ascertain whether the antibiotic or the infection is responsible for the disease. In the case presented, the history of mycoplasma pneumonia and the treatment with clarithromycin may have prompted an earlier diagnosis of EM since these are known risk factors.

EM minor presents with the classic rash described as “target lesions” and has no mucosal involvement. The diagnosis of EM major implies mucous membrane involvement. EM minor and major are not characterized by epidermal detachment, making them distinguishable from SJS and TEN on the cellular level. Epidermal detachment of less than 10% of body surface area is often classified as SJS, more than 30% detachment as TEN, and between 10% and 30% as SJS/TEN. An important lesson learned in this case is that extra attention must be given to appreciate skin findings in patients of darker pigmented races and ethnicities, as this patient did have classic target lesions and mucosal involvement, which were not appreciated on earlier examinations.

In our case, the differential not only had to include entities such as EM, SJS and TEN, but also needed to include varicella zoster virus (VZV) and herpes simplex virus (HSV). The need to include VZV stemmed from the fact that the patient had not received a VZV vaccination and had never had a clinical case of chickenpox. The patient’s cutaneous lesions included many erythematous papules, two of which were larger with central crusting, and he did have some pruritis as well as mucosal lesions. Though the patient denied current or past sexual activity, one must always suspect that a sexually transmitted infection could be causative when lesions are noted on genital exam. Significant findings of umbilicated and ulcerative papules on the scrotum and penis on a teenage patient that did not mention a rash in this area reinforces the importance of doing a detailed physical exam on all patients. Not only were these findings concerning for possible HSV infection which might need treatment, but HSV infection could also serve as a trigger for EM. However, the PCR was later negative for both VZV and HSV, and biopsy was most consistent with EM.
EM minor and major generally improve without treatment in 2-3 weeks, and this spontaneous resolution proved true in this patient as well. The best emergency department intervention is to determine (and if possible treat) the cause of the rash, remove offending agents (if applicable), and provide symptomatic care. There is no support in the literature for use of corticosteroids. Though mortality may occur in up to 5% of cases of SJS and in 30% of cases of TEN, mortality has not been reported with EM. However, one should be aware that there is potential for ocular involvement and risk of permanent visual sequelae.

In the case presented, a diagnosis of erythema multiforme was not made until the patient’s third medical visit after initial diagnosis of mycoplasma pneumonia and treatment with clarithromycin. Important lessons to be learned from this case include:

1. Importance of using all symptoms and risk factors to elucidate a correct and unifying diagnosis …sometimes it can all go into one box.
2. View the “repeat offender” as an opportunity, not an annoyance
3. Value of a very detailed physical examination…undress your patients!
4. The differences between erythema multiforme, Stevens - Johnson syndrome, and toxic epidermal necrolysis can be very difficult to distinguish at the clinical level. Keep them on your differential, and keep your clinical suspicions high!

REFERENCES


Pertussis: Who do the Infants Get it From???

Grandparent 8%
Dad 15%
Sibling 20%
Other 25%
Mom 32%

Immunizations...Not Just for Kids Anymore!

Please join us in welcoming our two newest faculty members, Drs. Valerie Davis and Chris Pruitt! Both Valerie and Chris join us after completing their fellowships here at UAB in June. We were thrilled to be able to keep them here in Birmingham, and feel fortunate to have them in our family. Welcome aboard!