THE Journal
OF THE ARKANSAS MEDICAL SOCIETY
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Working Toward Lasting Tort Reform in Arkansas

AMS Supports Senate Joint Resolution 8

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Winner of the ASAE Excellence in Communications Award

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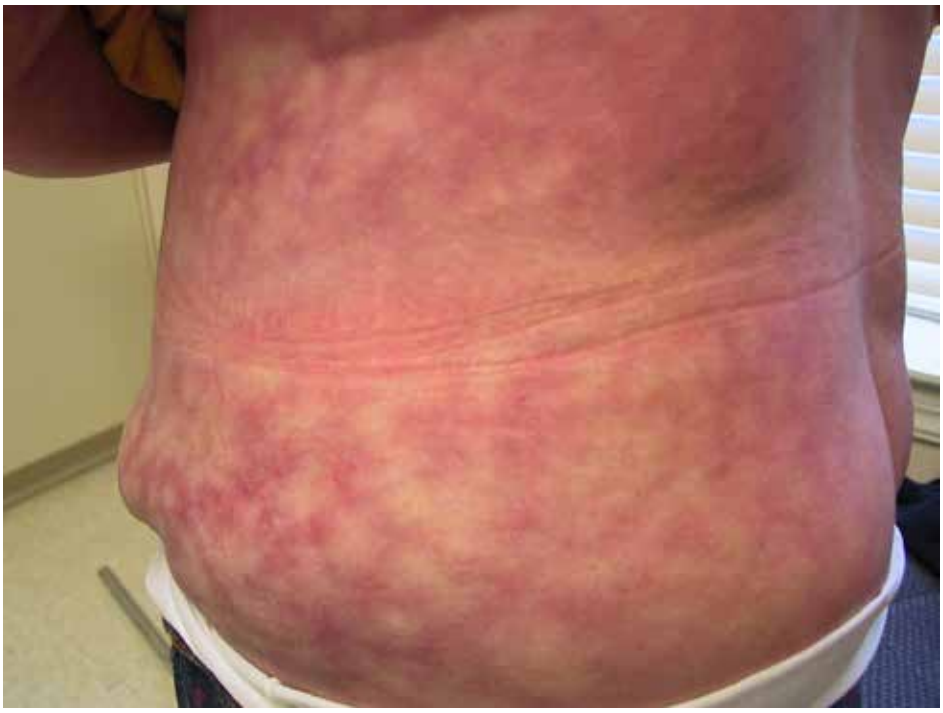
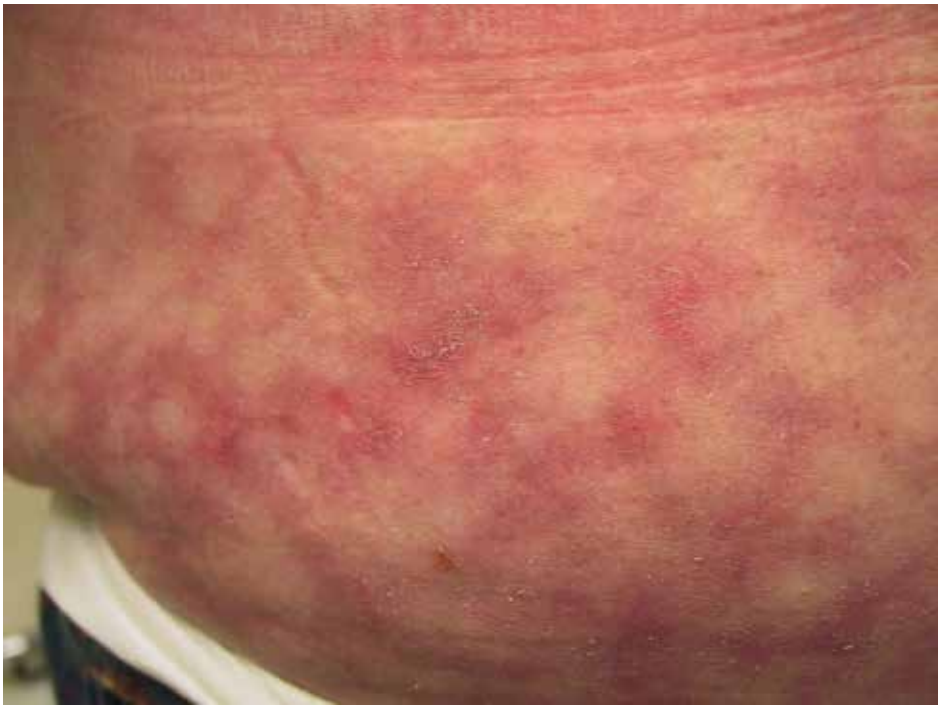
Kevin St. Clair, MD

Derm Dilemma





This 61-year-old woman has slowly developed over the past two years a reticulated, erythematous, asymptomatic rash involving only the lower back and flanks. Based solely upon the clinical appearance and the absence of cutaneous findings elsewhere, what might be your first question to this patient?

A. Do you have type 1 diabetes mellitus?
B. Do you have chronic low back pain?
C. Do you have thyroid disease?
D. Are you taking any blood thinning medications?
E. Are you using any illicit drugs?

Answer:

B. This condition is known as *erythema ab igne*, and results from prolonged exposure to thermal heat of insufficient intensity to create a burn. Affected areas include the lower legs (fireplace, space heater) and the lower back in patients suffering from chronic back pain (heating pad), as in this patient. The erythematous component may improve after recognition and removal of the infrared heat source, but post inflammatory hyperpigmentation and atrophy may persist indefinitely. Rarely, squamous cell carcinoma has been reported to arise within erythema ab igne. AMS

THE Journal
OF THE ARKANSAS MEDICAL SOCIETY

by CASEY L. PENN

Working Toward Lasting Tort Reform in Arkansas

AMS Supports Senate Joint Resolution 8

Do you ever wonder, what is a *tort* and how many times must we reform it before it sticks?

Silly question, perhaps, but unfortunately, we know that here in Arkansas, tort reform legislation hasn't had the lasting effect for which it was designed. This article – part trip down memory lane / part update and call to action – will remind us of the continuing struggle and share details about a more permanent solution. AMS officials are hoping that, come November, tort reform will be firmly established through the passage of a constitutional amendment that was referred to the voters by the Arkansas General Assembly through Senate Joint Resolution 8. More to come on that, but first …

A Review of What's at Stake

A 2007 journal article (by this author) defined the issue, its application being the heartbreaking experiences of respected orthopedist (retired) and former AMS president, John Lofton Wilson, MD. Even then, the issue was all too familiar. *(All following excerpts are from April 2007's issue, which looked back at the results of existing tort reform legislation.)*

> The term *tort reform* refers to the reformation of a portion of civil law. In 2003, Arkansas legislators passed The Arkansas Civil Justice Reform Act (House Bill 1038), tort reform legislation related to medical malpractice liability. Some opponents of House Bill 1038 said there was no need for the reform. Others saw things differently; these argued that without tort reform, many of our state's brightest and most capable physicians would be forced to abandon or severely limit their practice of medicine and thus limit the medical services offered to patients in our state. Proponents also pointed to tort reform as a necessary tool for keeping malpractice insurance at a reasonable level and for preventing malpractice carriers from leaving our state.
>
> Medical tort reform continues to be an issue here in Arkansas and across the nation. President Bush, in his recent State of the Union address, called for all states to pass medical malpractice liability reform. Although it's been a few years since our state's reforms were enacted, the Arkansas Medical Society urges members to be reminded of what is at stake without such legislation and therefore be on guard to defend medical tort reform now and in the future.

Missy Irvin

Dr. John Lofton Wilson, orthopedist for OrthoArkansas, remembers the stakes of tort reform all too well … After 30 years of practicing orthopedics without incident, Dr. Wilson was unjustly accused of violating the expected standard of care. From 2001 to 2002, he was hit with three lawsuits – all from patients seen during weekly visits to Helena, Ark.

"You try to be as honest as you can in your care of people," said Dr. Wilson. "When someone criticizes you, you feel terrible." Unfortunately, bad feelings were simply the beginning of the repercussions of the suits. Even though all three lawsuits were without merit and therefore never argued in court, Dr. Wilson suffered anyway – as did his malpractice insurance carrier. After his carrier, State Volunteer Tennessee Mutual, spent roughly $40,500 to process the frivolous suits, Dr. Wilson had few options left regarding his Helena practice. Wilson received word from his insurance carrier that if he continued practicing in Helena – something he had done for 21 years – he could be placed in

a high-risk insurance group. The base cost of this could be $10,000 per month for liability coverage. "I had to stop practicing in Helena, which I truly hated to do," said Dr. Wilson. "If I stayed, I'd be working for the insurance company rather than for myself, and that didn't make sense. For a few years after I left, I still saw three to five patients a week who drove two-and-a-half hours from Helena to see me."

Faced with his situation, Dr. Wilson didn't give up and quit – though he did cease practicing in Helena to the detriment of patients who would otherwise have had access to his care. Instead, he put his experiences to work for good. Along with that of fellow Arkansas physicians and the AMS, Dr. Wilson's testimony helped bring about change.

David Wroten

… Signed into law on March 25, 2003, The Arkansas Civil Justice Reform Act of 2003 capped punitive damages at $1 million. It also reduced physician liability exposure under the joint and several liability laws, and – what some say is its most important aspect – required an affidavit of merit by a physician of the same specialty as the one being charged. The affidavit must be filed within 30 days of filing the suit.

Coming Around Again

A little more than a decade and two U.S. Presidents later, the provisions set down in the Arkansas Civil Justice Reform Act have been systematically stripped away, piece by piece. Even so, the AMS and many others continue to work toward lasting tort reform in Arkansas.

Current efforts, as mentioned, center on Senate Joint Resolution 8, a constitutional amendment to come before voters this year. AMS Executive Vice President David Wroten laid out the specifics of SJR8 in his commentary in November 2017 of *The Journal*. Speaking with authority on this long-unresolved issue, Wroten urged members to dig in and help. "Ok Arkansas physicians," he wrote, "here is your chance to have *real* tort reform."

Sponsored by long-time friends of the Society, Sen. Missy Irvin and Rep. Bob Ballinger, SJR8 was adopted during the 2017 legislative session. Sen. Irvin explains the reasoning behind introducing the measure.

"Doctors led the legislative effort to pass tort reform in 2003 and the results were overwhelmingly positive," said Sen. Irvin. "Malpractice filings dropped by almost 33% by 2006. Fourteen years later, our Arkansas Supreme Court has reversed our progress, making it clear that the constitution must be amended to ultimately pass tort reform.

"I sponsored Senate Joint Resolution 8 (SJR8) with more than 66 co-sponsors to refer a tort reform constitutional amendment to voters in 2018. I know it will be a tough campaign because trial lawyers will stop at nothing to defeat tort reform in Arkansas. NOW is the time for Arkansas' doctors and medical community to stand together with the coalition dedicated to winning this effort. Contribute to the campaign. Speak out in your community. This issue is important for our state and will enable us to recruit and retain physicians and grow jobs. Physicians must use their voice with patients, colleagues, and businesses in their communities to rally the votes for passage. It is vital."

SJR8 Includes Four Primary Components:

- **33 1/3% cap on attorney contingency fees**
- **$500,000 cap on non-economic damages**
- **Cap on punitive damages equal to the greater of $500,000 or 3 times compensatory damages**
- **Provisions designed to authorize the General Assembly to adopt other tort reform measures**

The latter may be the most important, per Wroten. "Previous tort reform statutes have been overturned by the courts on the grounds that those provisions amounted to 'rules of the court' and were the sole purview of the court. If SJR8 passes, the General Assembly will be consti-

tutionally authorized to adopt these 'rules of the court.' That would enable the legislature to consider legislation replacing the 2003 tort reform measures and more."

A Coalition in Support of SJR8

"The coalition dedicated to winning this effort" that Sen. Irvin mentioned is the legislative question committee, **Arkansans for Jobs and Justice,** created to support SJR8. Membership is diverse and – with the AMS – includes Arkansas State Chamber of Commerce, the Poultry Federation, Arkansas Trucking Association, Arkansas Health Care Association, Arkansas Farm Bureau and Arkansas Hospital Association.

The Society's participation was initially led by former AMS President Scott Cooper, MD. "My last act as AMS president was to appoint an ad hoc committee that will spearhead our efforts toward getting SJR8 passed in the general election of November 2018," recalled Dr. Cooper. Committee members are President Amy Cahill, Vice President Bill Dedman, President-Elect Lee Archer, and I'm the chairman. Our first order of business was to recommend to the Board of Trustees a dollar amount that we would be willing to put up in support of the campaign. That figure was $500,000, and the board readily approved it … 40% of that was distributed immediately to Arkansans for Jobs and Justice."

Carl Vogelpohl

An outspoken and passionate proponent of lasting tort reform, Dr. Cooper had much to say about SJR8 and the coalition working to pass it. "In 2003, AMS was instrumental in getting tort reform passed legislatively, but all those potential benefits are long gone.

"We need a constitutional amendment to put these commonsense policies into effect. Obviously, our primary interest here is on the medical liability side, but as you can see from the coalition membership, a variety of Arkansas interests know that we need real, durable tort reform. I think anything that can be done that keeps the courts from being seen as a lottery game makes sense from a simple fairness point of view. There is nothing in this constitutional amendment that inhibits an aggrieved citizen's right to seek relief in court. It will, however, inhibit the trial lawyers' ability to gain more than those they represent … and what's wrong with that?"

Carl Vogelpohl– a Name You Should Know

Arkansans for Jobs and Justice Campaign Manager Carl Vogelpohl is a seasoned campaign veteran who has managed and advised on local, state and federal campaigns since 2004. An Arkansas native, he most recently served as chief of staff to Arkansas Attorney General Leslie Rutledge and before that was chief of staff to former Congressman and current Arkansas Lt. Governor Tim Griffin. He will work closely with committee members to develop strategies that he hopes will lead to a win in November. "Arkansans for Jobs and Justice was formed to improve the economy in Arkansas by creating jobs and ensuring fairness in our civil justice system through the passage of SJR8 on the 2018 Arkansas ballot," explained Vogelpohl, citing the failure of past reforms as part of his own interest in leading this campaign to victory. "Arkansas needs tort reform. The Arkansas Supreme Court said it requires a constitutional amendment, so that is exactly what we are working to do.

"Physicians will be critical to that effort now as they were then," said Vogelpohl, who went on to make some specific requests of AMS member physicians: be a voice (to patients, legislators, and fellow physicians), be a contributor financially, and be present. "It is important that physicians lead on this effort and tell their stories about the impact of trial lawyers on healthcare in our communities. This will be a historically expensive campaign that the state can't afford to lose. Your financial support will be critical."

The AMS, too, must put its money on the table, Wroten indicated. "Make no mistake, this will be difficult and expensive. Arkansas trial attorneys have been stock-piling money since the 2003 statute in anticipation that sooner or later the supporters of that law would seek a constitutional amendment. The AMS Board of Trustees has pledged $500,000 from AMS reserves to support the effort. We are reaching out to AMS membership and other physician organizations to help fund what is expected to be a multi-million-dollar campaign."

Interestingly, that 2007 article concluded with a plea to AMS members to remain vigilant on the issue of tort reform and ready to defend tort reform. "… The AMS must continuously monitor … and be ready to help defend the provisions of the Civil Justice Reform Act," was the quote then from Wroten, who, now that CJRA has been nullified by the courts, is calling for your help.

1. For details about SJR8, or for information about helping financially or in kind, call Scott Smith or David Wroten at AMS. Arkansas Jobs for Justice can accept contributions of any size from individuals or businesses. Contributions can be mailed to P.O. Box 250207, Little Rock, AR 72225, or made online at ARJobsandJustice.com. AMS

Physician Leadership Opportunities

No entity has more influence over health care in Arkansas than the Arkansas Medical Society. If you are ready to take an active role in channeling that influence, consider running for the AMS Board of Trustees. There are currently 37 District Trustees representing ten geographic areas of the state. Half of those positions are up for election/re-election every year. District Trustees are elected directly by AMS members in their respective district through a written and online ballot. Voting takes place from February 15 through February 28, 2018. The AMS Board of Trustees meets quarterly for approximately two hours.

If you are interested in serving on the AMS Board of Trustees as a district trustee contact Kay Waldo at kwaldo@arkmed.org or 501-224-8967 for more information.

Winning candidates will be notified and should be prepared to attend the AMS House of Delegates meeting on May 5, 2018 at DeGray Lodge in Bismark.

Deadline for nomination/application is February 1, 2018.

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CASE STUDY

Spontaneous Splenic Artery Aneurysm Rupture during Pregnancy

Muhammad Tariq Shakoor, MD[1]; Samia Ayub, MD[2]; Zunaira Ayub, MD[3]; Abdul Ahad[4]

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Abstract:

Splenic artery aneurysm (SAA) is a rare pathology, mostly discovered incidentally on imaging. Symptomatic cases present with rupture. Prevalence in the general population is variable ranging from 0.1 -0.2% in a large autopsy series and 0.78% in an angiogram-based study. SAA rupture is associated with a high mortality rate of 25% which increases disproportionately to 75% among pregnant women with a fetal mortality of 95%. We report a case of septic shock secondary to chorioamnionitis, complicated by hemorrhagic shock due to SAA rupture with survival of the patient.

Background:

Splenic artery aneurysm (SAA) is a rare pathology, mostly discovered incidentally on imaging. Symptomatic cases present with rupture.[1-3] Its prevalence in the general population is variable ranging from 0.1- 0.2% in a large autopsy series,[4] whereas a study of 3600 arteriograms found the incidence to be 0.78%.[5] SAA rupture is associated with a high mortality rate of 25% but increases disproportionately to 75% among pregnant women with a fetal mortality of 95%.[6-8]

> *In symptomatic cases, immediate treatment is warranted which can be surgery (laparotomy or laparoscopic) which usually involves Splenectomy/ splenopancreatectomy with splenic artery ligation or embolization of the aneurysm.[16]*

Congenital defects and atherosclerosis of the arterial wall have been described as the key cause of SAA.[9] Preliminary weakness of the arterial wall with concomitant physiological changes in pregnancy are considered to promote the aneurysm rupture.[10] We report a case of septic shock secondary to chorioamnionitis, complicated by hemorrhagic shock due to SAA rupture in the postpartum period with survival of the patient.

Case Presentation:

A 20-year-old female who is 37 weeks pregnant presented to the emergency department with abdominal pain, vaginal discharge and low grade fever. Past medical history included depression and vaginal herpes. Her initial vitals include temperature (T) 99.9 Fahrenheit, heart rate and blood pressure don't need to be capitalized but either lower case all or upper case pressure (BP) 129/68 mm Hg and oxygen saturations of 99% on room air. Her BP dropped to 58/30 mm Hg in the next one hour and she started complaining of vaginal pressure. Fetal ultrasound did not show any fetal heart sounds or fetal movements, suggesting fetal demise. Initial labs were remarkable for White Blood Count of 36000 per microliter, Hemoglobin 8.3 g/dl and lactic acid 12.6 mmol/L. Her urine analysis and chest x-ray were unremarkable. She was started on broad spectrum antibiotics and resuscitated aggressively with intravenous fluids and vasopressors for septic shock from presumed chorioamnionitis. Her condition improved after fetal delivery and she was off vasopressor support and her repeat lactic acid levels normalized. Her vitals improved to T 98.8, BP 130/85 mm Hg (without vasopressors), HR 94 and O2 saturations 100% on room air. Later that evening she suddenly developed hypotension with BP of 79/51 mm Hg, HR 132/min and O2 saturations dropped to 84% on 3 liter nasal cannula. On examination her abdomen was remarkably distended and very tender to palpation. CT scan of abdomen and pelvis was done to look for the cause of acute abdomen, with suspicion of possible bowel or uterine perforation. Repeat labs were remarkable for WBC 26000 per microliter, hemoglobin 6.1 g/dl, platelets 25000 per microliter. Blood transfusion was started immediately. To our surprise, ruptured splenic artery aneurysm with hemoperitoneum was seen on the CT scan (Figure). Patient was taken for emergent laparotomy, splenic artery ligation and total splenectomy. Patient stabilized after the procedure weaned off the vasopressors and mechanical ventilator support. She was subsequently discharged home after 2 days.

Discussion:

The true prevalence of SAA in pregnancy is unknown as most of them are asymptomatic. Unfortunately symptomatic cases present with rupture. Current data estimates maternal and fetal mortality rate as high as 75% and 95%, respectively.[6-8] Risk factors for the development of SAA include female sex (4:1), congenital abnormalities of the vessels, inherited vascular and connective tissue disorders, vascular trauma, inflammatory processes, multiparity and portal hypertension.[11] Two-thirds of aneurysms rupture in the third trimester.[11]

The precise etiology of SAA is unclear. Different mechanisms have been proposed to contribute in the pathogenesis. Pregnancy is associated with a number of physiological changes, such as increased intravascular volume with relative portal congestion, increased flow velocity through the splenic artery as a result of dis-

> Continued on page 182.

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Home Visits Improve Preterm Infants' Health

BY PATRICK H. CASEY, MD; CARMEN IRBY, MSN, BSN, CNS-BC; SANDRA WITHERS, APRN, BSN, PPCNP-BC; SUSAN DORSEY; JINGYUN LI, MS; and MALIK RETTIGANTI, PhD

The benefits of home visiting programs on the mortality, health and development of infants and young children of families at risk has been emphasized by the American Academy of Pediatrics, the Academic Pediatric Association and the Zero to Three program. Low-birth-weight, preterm (LBWPT) infants are at greater risk for death and long-term health, development and behavioral problems. In addition, parents of these infants are at greater risk for various psychoemotional problems like anxiety and depression.

Home visiting helps families at risk get support services, links to health care and ongoing education. Nurse home visits have improved maternal and child mortality rates, and child behavior and learning.[1-3] An increasing number of preterm infants survive and a large percentage have neurodevelopmental and health complications.[4,5] Additionally, the families of medically fragile children have significant financial, physical care and emotional challenges after a neonatal intensive care unit (NICU) discharge. Caring for low-birth-weight infants is a particular challenge for lower socioeconomic-status families; increasing the infants' risk for long-term morbidity.[6] These families have a particular need for special community services and coordination of health care after discharge from a NICU.

The Following Baby Back Home (FBBH) program, which began in 2009 and funded by Arkansas' Medicaid program, assists families of high-risk, LBWPT infants after NICU discharge. FBBH goals include maximizing children's health and development within the constraints of their medical conditions, and improving family skills and confidence in providing a safe, stimulating, nurturing home.

FBBH uses nurse-social worker teams that focus on feeding, safe sleep, growth and development, medications, managing symptoms, injury prevention, early identification of complications and service coordination. The teams facilitate communication between the family and medical providers, identify local resources, assure follow-up with medical appointments and provide parent education. The team assures the child receives required immunizations as they age, monitors growth and development, and aggressively refers the child for evaluation and treatment, as needed.

Parents of preterm infants face greater challenges in parenting and have more risk for anxiety or depression.[7] FBBH teams monitor these issues, support the family's needs and make referrals.

FBBH home visiting teams provide two home visits per month for the first two months, one monthly visit until age 1, one home visit every other month until age 3 and telephone contacts on nonvisit months. Case management helps identify child/family issues that require assistance, coordination or referral.

The FBBH program evaluation included LBWPT infants, referred from all NICUs in Arkansas, and discharged with serious chronic medical conditions, as identified by a neonatologist. Chronic conditions included lung disease, congenital heart disease, brain injury, infections, feeding problems and growth concerns.

FBBH results for both mortality and immunizations — two key metrics reflecting children's health and well-being — are impressive. The infant mortality rate (IMR) — defined as death in the first 12 months — for the FBBH cohort was 9.2 per 1,000 infants, compared to 50.4 per 1,000 infants

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nationally and 51.7 Arkansas infants (both P < .001). In comparing the IMR rates of children born <37 weeks' gestation, the FBBH cohort's IMR was 9.2 per 1,000 infants; lower than both the national rate of 34.5 and the Arkansas rate of 33.6 (P = .01).

The IMR of the FBBH cohort was nearly six times lower when compared with low-birth-weight children in Arkansas and nationally. The IMR was nearly four times lower when compared with preterm children in Arkansas and nationally.

The receipt of required immunizations by the FBBH cohort in the 0- to 12-month range was ≥96 percent. The FBBH cohort received a significantly higher percentage for every immunization series for 0- to 18-month-old children and for 19- to 35-month-old children, compared to national and Arkansas data. Overall, 92.2 percent of the FBBH sample received all recommended immunizations to age 18 months; this rate persisted to age 35 months. This compares with 61.5 percent of the national sample, and 49.5 percent of the Arkansas sample (P < .001).

The cost of neonatal stay was more than three times higher for FBBH infants compared with the control group (P < .0001). The NICU length of stay and the Neonatal Health Index, markers of the complexity of neonatal stay, were almost three times greater in the FBBH group (P < .0001). Clearly, infants referred to FBBH were sicker and more medically involved, compared with non-FBBH preterm infants.

The number of hospitalizations, outpatient and emergency department (ED) visits, pharmacy claims, and developmental interventions for both the FBBH and matched control groups were not statistically significant in post-NICU admissions, readmissions, ED visits or associated costs. Like most other studies, and as expected for this medically fragile population, our evaluation of FBBH showed no change in hospitalization or readmissions. Although the FBBH infants' average length of stay (almost three days) was impressively lower than the control group, it did not reach statistical significance. The shorter length of stay may be due to the attending physicians' willingness to discharge early, knowing the family had FBBH support.

The FBBH group had significantly more routine and nonroutine clinic visits, pharmacy claims and developmental intervention claims, compared to the matched control group. We speculate that education, health status monitoring and FBBH support resulted in families more frequently utilizing outpatient medical care and pharmacy, which likely contributed to lower IMR.

Our results suggest that nurse-social worker home visiting teams who follow carefully designed intervention protocols can positively affect the health of medically fragile, LBWPT infants when measured by mortality and immunization rates. To prevent future complications, it may be beneficial to use acute care and pharmacy services more frequently during the first year of life. The literature suggests that the impact of home visits on health utilization and cognitive development is delayed in the first year of life, but appears in later years.[8-10]

LBWPT children, particularly those discharged to socially vulnerable families, are an appropriate group to receive home visits. Considering the high NICU cost to keep these infants alive, home visits are a wise investment to optimize their health.

For more information about FBBH program, contact Patrick Casey at caseypatrickh@uams.edu or Carmen Irby at irbyc@uams.edu or call 501-526-8732. ▲

The authors are employees of the University of Arkansas for Medical Sciences.

REFERENCES

1. Donovan EF, Ammerman RT, et al. Intensive home visiting is associated with decreased risk of infant deaths. Pediatrics. 2007;119:1145-1151.
2. Olds DL, Holmberg JR, et al. Effects of home visits by paraprofessionals and nurses on children. Follow-up of randomized trial at ages 6 and 9 years. JAMA Pediatr. 2014;168:800-806.
3. Olds DL, Kitzman H, et al. Effect of home visiting by nurses on maternal and child mortality. JAMA Pediatr. 2014;168;800-806.
4. Younge N, Goldstein RF, et al. Survival and neurodevelopmental outcomes among periviable infants. N Engl J Med. 2017;376:617-628.
5. Stensvold HJ, Klingenberg C, et al. Neonatal morbidity and 1-year survival of extremely preterm infants. Pediatrics. 2017;139;e20161821.
6. Enlow E, Faherty LJ, et al. Perspectives of low socioeconomic status mothers of preterm infants. Pediatrics. 2017;239:e20162310.
7. Drotar D, Hack M, et al. The impact of extremely low birth weight on the families of school aged children. Pediatrics. 2006;117:2006-2013.
8. Achenback TM, Howell CT, et al. Nine-year outcome of the Vermont Intervention Program for low birth weight infants. Pediatrics. 1993;91:45-55.
9. Perrault C, Coates AL, et al. Family support system in newborn medicine: does it work? Follow-up study of infants at risk. J Pediatr. 1986;108:1025-1030.
10. Agrawal R, Hall M, et al. Trends in health care spending for children in Medicaid with high resource use. Pediatrics. 2016;138:e20160682.

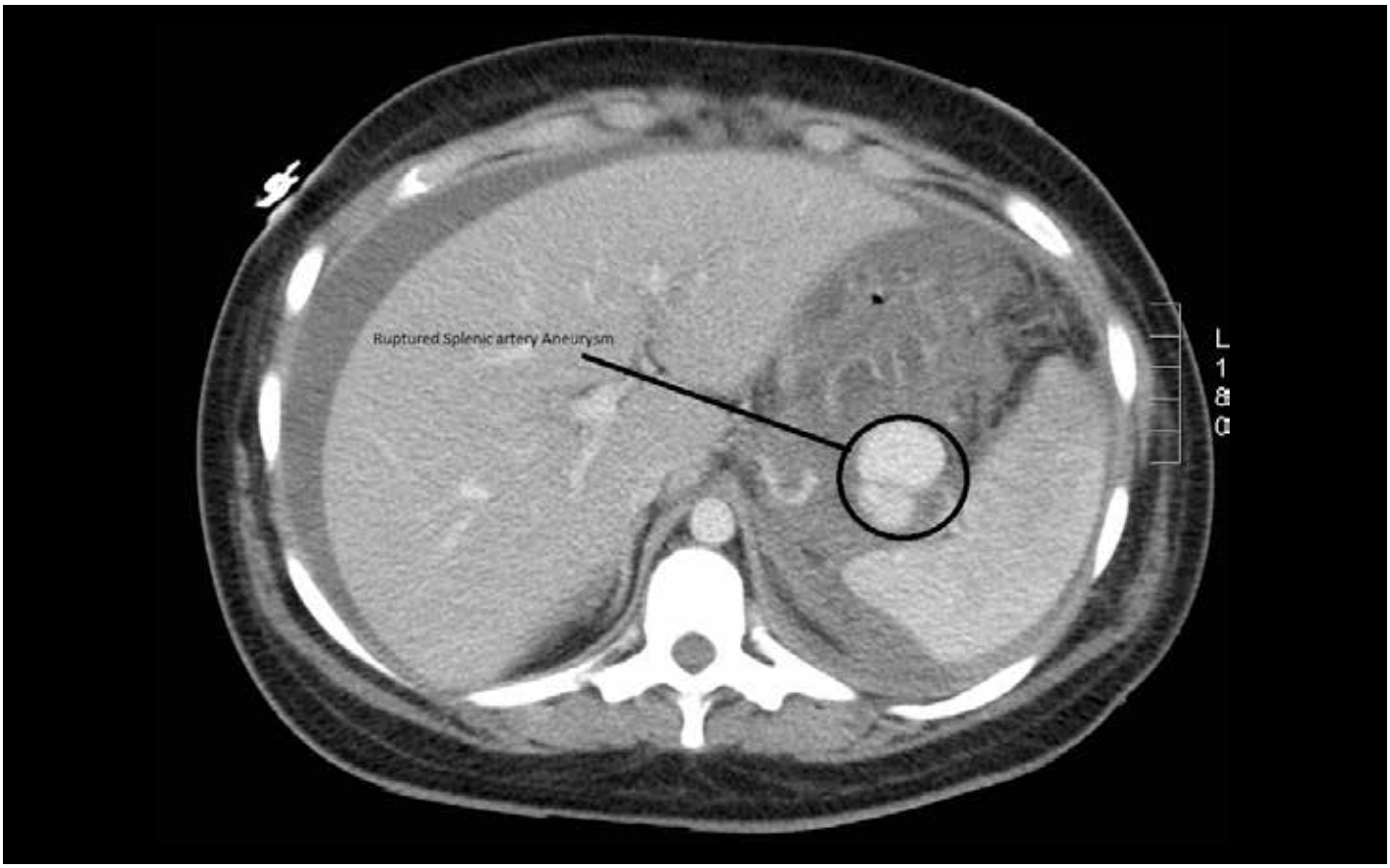

*Figure: 2.8 * 3.5 cm2 splenic artery aneurysm rupture with large amount of blood in abdomen.*

tal aortic and iliac compression from the gravid uterus and weakening of the ground substance of the arterial media (estrogen and progesterone cause histological changes in the arterial wall mainly medial degeneration leading to aneurysmal dilatation).[11] These physiological changes increase the stress on the arterial wall leading to SAA rupture. In our case aggressive fluid resuscitation and vasopressors further increased the stress on the arterial wall and most likely lead to SAA rupture.

In 20-25% of the cases the rupture consists of two stages, characterized by initial rupture within the lesser sac contained by either omentum and/or blood clots that block foramen of Winslow. This is followed by rupture into greater sac due to increased tension within the lesser sac.[7] This phenomenon results in a pattern of sudden initial abdominal pain with an intermediate stable period followed by sudden collapse (syncope, hypotension and shock). There are no physical signs that reliably indicate the presence of SAA rupture which makes early diagnosis very challenging.[12] Placental abruption is one of the most commonly made misdiagnosis.[13]

» *There is no consensus regarding management of asymptomatic cases. However it is recommended to treat the aneurysms that are larger than 2 cm.*

Radiological investigations are quite helpful in making the diagnosis. Abdominal X-ray is not the first line test for SAA rupture but in cases of visceral perforation it can show free air. Ultrasound and Doppler ultrasound are preferable in pregnancy as it is non-invasive and does not involve any radiation exposure to the fetus. It can reveal presence of free fluid in abdomen and the diagnosis can be confirmed at laparotomy. Although contrast-enhanced CT and MRI are quite useful in evaluation of the splenic artery, safety of the fetus has to be considered during pregnancy. The National Radiological Protection Board arbitrarily advises against use of MRI in the first trimester. Teratogenesis is not a major concern after diagnostic CT studies in pregnancy as the radiation dose is generally too low to cause such effects. However, intravascular contrast media should be avoided in pregnancy due to the concern of possible hazard to the fetus and should only be used if absolutely necessary and only after discussion of risks and benefits with the patient.[14]

There is no consensus regarding management of asymptomatic cases. However it is recommended to treat the aneurysms that are larger than 2 cm. In pregnancy, minimally invasive techniques should be utilized like transcatheter embolization/coiling, percutaneous angiographic embolization or laparoscopic ligation. In patients with no planned pregnancy, the recommendations for management of aneurysms less than 2 cm is inconclusive because the understanding of natural history of SAA is incomplete. However, in pregnancy proactive management of aneurysms less than 2 cm should be carried out.[15]

In symptomatic cases, immediate treatment is warranted which can be surgery (laparotomy or laparoscopic) which usually involves Splenectomy/splenopancreatectomy with splenic artery ligation or embolization of the aneurysm.[16]

Conclusion:

This case illustrates that a high degree of suspicion is required to make the diagnosis of SAA rupture in pregnancy having sudden hemodynamic instability with or without sharp abdominal pain. Immediate resuscitation and cessation of hemorrhage is the key to maternal survival. Further research is required to understand the natural history, pathophysiology, prognosis and management strategies especially in asymptomatic SAA.

References:

1. Popham P, Buettner A. Arterial aneurysms of lienorenal axis during pregnancy. Int J Obstet Anesth 2003;12(2):117–9.
2. Jung SI, Joh YG, Um JW, Suh SO, Whang CW, Corbascio M, et al. The Seoul experience of splenic artery aneurysms. Ann Chir Gynaecol 2001;90(1):10–4.
3. Dave SP, Reis ED, Hossain A, Taub PJ, Kerstein MD, Hollier LH, et al. Splenic artery aneurysm in the 1990s. Ann Vasc Surg 2000;14(3):223–9.
4. Babb RR. Aneurysm of the splenic artery. Arch Surg 1976;111:924–5.
5. Arepally A, Dagli M, Hofmann LV, Kim HS, Cooper M, Klein A, et al. Treatment of splenic artery aneurysm with use of a stent-graft. J Vasc Interv Radiol 2002 Jun;13(6):631–3.
6. Shahabi S, Jani J, Masters L, Cobin L, Greindl J. Spontaneous rupture of a splenic artery aneurysm in pregnancy: report of two cases. Acta Chir Belg 2000;100(5):231–3.
7. Caillouette JC, Merchant EB. Ruptured splenic artery aneurysm in pregnancy. Twelfth reported case with maternal and fetal survival. Am J Obstet Gynecol 1993;168:1810–3
8. Hillemans P, Knitza R, Muller-Hocker J. Rupture of splenic artery aneurysm in a pregnant patient with portal hypertension. Am J Obstet Gynecol 1996;174(5):1665–6.
9. Westeott JL, Ziter F. Aneurysms of the splenic artery. Surg Gynaecol Obstet 1973;136:541-546.
10. D'Ambrosio R, Ricciardelli L, Lanni GL, Iarrobino GF, Moggio G, Casale LS, et al. Intraperitoneal haemorrhage from rupture of an aneurysm of splenic artery: case report and literature review. Ann Ital Chir 2003;74(1):97–101.
11. Selo-Ojeme DO, Welch CC. Spontaneous rupture of splenic artery in pregnancy—review. Eur J Obstet Gynecol Reprod Biol 2003;109, 124–7.
12. Mattar SG, Lumsden AB. The management of splenic artery aneurysms: experience with 23 cases. Am J Surg 1995;169:580–4.
13. Al Asfar F, Saber M, Dhar PM, Al Awadhi N. Rupture of splenic artery aneurysm during labour: a case of maternal and fetal survival. Med Princ Pract 2005;14(1):53–4.
14. Patenaude Y, Pugash D, Lim K, et al. Diagnostic imaging committee. The use of magnetic resonance imaging in the obstetric patient. J Obstet Gynaecol Can 2014;36(4):349–55
15. Sadat U, Dar O, Walsh S, Varty K. Splenic artery aneurysms in pregnancy—a systematic review. Int J Surg 2008;6: 261–265.
16. de Perrot M, Buhler L, Deleaval J, Borisch B, Mentha G, Morel P. Management of true an aneurysms of the splenic artery. Am J Surg 1998;175:466–8. AMS

Exertional Heat Illness: The Basics of Recognition, Treatment, and Prevention

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Abstract

EXERTIONAL HEAT ILLNESS (EHI) IS A SERIOUS HEALTH CONDITION THAT IS COMMONLY SEEN IN ATHLETES EXPOSED TO EXTREME ENVIRONMENTS IN COMBINATION WITH VIGOROUS PHYSICAL ACTIVITY. Numerous intrinsic and extrinsic risk factors can contribute to the development of EHI; however, many of these can be modified or mitigated with appropriate preventative strategies. If a patient experiences heat-related symptoms, the key to treatment is early recognition and rapid cooling. Once resolved, the athlete will need to be closely monitored and activities modified to ensure he or she can safely return to play.

Introduction

Every year as summer approaches and the temperature steadily increases, one of the biggest concerns for physicians covering athletic events is the risk for exertional heat illness (EHI). Every year, there are reports of severe health episodes and even deaths from exposure to extreme environmental elements. The number of sports-related exertional heat stroke (EHS) deaths in the United States has doubled since 1975, and more deaths were reported between 2005 and 2009 than during any 5-year period of the preceding 30 years.[1,2] Heat illness is the third most common cause of sports-related death, accounting for 15.6% of reported deaths and it is estimated that 6500 high school football players annually are treated for EHI.[3,4]

Because of this serious health risk, there has been a concerted effort to raise awareness of heat-related illness with a focus on education for athletes, parents, coaches, and emergency medical personnel. National and local organizations, such as the Korey Stringer Institute and the Kendrick Fincher Organization have focused efforts on education initiatives and legislation to help prevent these events in the future. Despite these programs, little attention is directed towards educating providers in the recognition, management, and prevention of EHI.

Pathophysiology

Thermoregulation is the process in which the body maintains core temperature in a predefined range despite exposure to diverse internal and external environments. Heat illness occurs when the thermoregulatory pathway and dissipation of heat is either interrupted or overcome by stressors. The body dissipates excessive heat by increasing cardiac output and shunting blood from the core to the skin. The majority of essential thermoregulation occurs through four mechanisms: conduction, convection, radiation, and evaporation.[5] At lower levels of exertion, the majority of heat loss is through conduction, convection, and radiation. As environmental heat exposure and exercise intensity increases, evaporation of sweat at the skin

surface becomes the predominant mechanism for body heat dissipation.

Risk Factors

Risk factors for EHI can be divided into intrinsic and extrinsic factors. Intrinsic risk factors include a history of previous EHI, poor physical fitness, lack of heat acclimatization, inappropriate clothing or protective equipment, young or old age, and inadequate sleep. Medical conditions include obesity, recent febrile illness, gastroenteritis, sickle cell trait, diabetes, sunburn, and cardiovascular disease.[6]

Extrinsic factors include intense exercise without appropriate breaks, lack of education among coaches, athletes, and medical personnel, lack of an emergency action plan, minimal access to fluids, and elevated wet bulb globe temperature (WBGT). The WBGT is the best measurement of external thermal load; it factors the temperature, the relative humidity, air velocity, and solar radiation in its calculation. This temperature serves as the standard for determination of overall environmental risk for activities and the greatest risk for EHI occurs when the WBGT exceeds 82^{0}F. [Figure 1]

Definitions

There is a continuum of heat-related illnesses with definitions based on the patient's symptoms and core body temperature. Heat illness can be divided into three categories: exercise-associated muscle cramps (EAMC), heat exhaustion, and heat stroke.

EAMCs are often one of the earliest indications of heat illness. This occurs after prolonged heat exposure with profuse sweating and inadequate fluid intake. The skeletal muscles begin to spasm and painfully contract, which is believed to be due to excessive sodium loss.[7] The most common symptoms include muscle contractions, thirst, and fatigue. The core body temperature is often normothermic, and does not exceed 104^{o} F. These commonly occur in people who are not sufficiently physically fit or have not trained appropriately for the proposed activity.

Heat exhaustion occurs when the body is unable to exercise in the heat due to fatigue, hypotension, inadequate energy stores, or cardiovascular insufficiency.[8] They often complain of nausea, vomiting, and headaches with profuse sweating, but cold, clammy skin on exam. However, they have no changes in mental status. The core temperature is often elevated, but less than 104^{o}F.

Figure 1. Activity Restrictions Based on the Wet-Bulb Globe Temperature (WBGT)

WBGT (^{o}F)	Recommendations
<82^{o}	Normal activities
82-86.9^{o}	3 rest breaks per hour for at least 4 minutes each
87-89.9^{o}	4 rest breaks per hour for at least 4 minutes each
	2 hour maximum duration for actvity
	Consider removal of some equipment (football pads)
90-92.0^{o}	Maximum of one hour of outdoor activity
	Minimum of 20 minutes of breaks
	No protective equipment during event
<92^{o}	Cancel proposed event, consider indoor alternatives

Brady LT, EbermanL, and SmithM. Exertional Heat Illnesses and Environmental Conditions During High School Football Practices. Am J Sports Med. 2015.

Exertional heat stroke (EHS) is the most severe form of heat illness and is a medical emergency. This occurs when the metabolic production and environmental heat load overwhelms the body's thermoregulatory system and the core body temperature increases to greater than 104^{o}F. This elevation causes profound mental status changes including irritability, aggressiveness, or confusion and can lead to end-organ damage.[9] These individuals often have hot, dry skin and require immediate treatment.

Treatment of Exertional Heat Illness

Management of exercise-associated muscle cramps and heat exhaustion emphasizes rest, rehydration, and gradual return to activity over a period of 24-48 hours. Most often, these events do not require treatment in the emergency department or activation of emergency medical personnel as long as a trained health care provider, including a physician or athletic trainer, is available to evaluate the patient.

EAMCs are treated with rest, oral rehydration with an electrolyte-rich fluid, stretching, and muscle massage. Most often, these athletes can return to activity on the same day after appropriate rehydration and rest.

Management for athletes with heat exhaustion includes aggressive oral rehydration, removal from environmental exposures, and cooling with cold packs to the axilla, forehead, and groin. Rehydration should utilize electrolyte and carbohydrate-rich fluids; if the athlete cannot tolerate oral hydration well, IV hydration can be utilized, however, these individuals should not be cleared for return to play until re-evaluated. For cooling, excessive clothing and equipment should be removed and they should be moved to a shaded or indoor location. Heat exhaustion is a significant risk factor for progression to heat stroke; these individuals should not be allowed to return to activity for a minimum of 24-48 hours. However, if they can maintain appropriate oral hydration, they do not require transport to an emergency department.

Heat stroke should be treated immediately and aggressively. These individuals need to be transported to a local emergency facility; however, the adage is "Cool first, transport second." The goal of treatment is to lower the core body temperature to less than 102.5^{0}F within 30 minutes of presentation.[10] A rectal temperature should be obtained for an accurate assessment of core temperature and reassessed every five minutes. If EHS is suspected, the athlete's torso and extremities should be immersed in a cold-water tub. Any excessive clothing or equipment should be removed after immersion. If full immersion is not available, other options, including cold towels to the forehead, groin, and axilla can be used, with constant exchanging of the towels to ensure maximum cooling. Adequate cooling should result in lowering of the core temperature 1^{0}F every 3 minutes and the patient should be removed from immersion once the temperature reaches 102^{0}F to avoid overcooling. Once this temperature is reached, the patient can be transported via EMS for further evaluation and treatment. If a rectal thermometer is not available, cool the patient for 10-15 minutes then transport. If a trained medical professional is available, an IV can be established during the cooling process to begin rehydration and support cardiovascular function.

There are no structured protocols for return to activity after EHS. Most guidelines suggest a minimum of 14-21 days of rest after labs (including a

Figure 2. Summary of Heat-Related Illness	
Heat Associated Muscle Cramps	Painful muscle contractions, thirst, fatigue
	Usually normothermic
	Can occasionally return to play same day
Heat Exhaustion	Weakness, fainting, dizziness, headache, hyperventilation, nausea, diarrhea, profuse sweating
	No mental status changes
	Core temperature elevated, but less than 104°F
	Minimum 24-48 hours before return to play
Exertional Heat Stroke	Tachycardia, hypotension, dizzyness, confusion, irritabilty, disorientation
	Core temperature >104°F
	Requires immediate cooling and eventual transfer to ER

Casa DJ, et al. National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses. J Athl Train. 2015 Sep;50(9):986-1000.

renal panel, electrolytes, and creatinine kinase) normalize. Once this period of rest concludes, the athlete can begin a progression of activity with heat acclimatization and close supervision by a health care professional. Often, an athletic trainer will be tasked with monitoring the patient during this period. Any symptoms during training should stop or slow this return to play progression. In most instances, an athlete should not be cleared to return for a minimum of one month following an episode of EHS.

Prevention

There are numerous modifiable risk factors before and during events that can help prevent EHI. Prior to scheduled activities, previous episodes of EHI should be thoroughly investigated and discussed yearly during the pre-participation physical (PPE). Details of these events should be made available to an athlete's athletic trainer if available to ensure proper supervision throughout the season. Also, during the PPE, appropriate hydration prior to a scheduled activity should be discussed. Preventing a greater than 2% body mass loss during an event can reduce the risk of significant dehydration and EHI. Confirming that adequate water is available during events, and ensuring that state-mandated protocols concerning the time and number of fluid breaks made available to these athletes is extremely important.

Generally, the first two to three weeks of preseason football practices have the highest risk of EHI. The biggest factors that play a role in this include typical weather patterns during the summer months and a lack of acclimatization by athletes during the offseason. Acclimatization is an important tool to help prevent heat-related illness. Individuals should be exposed to extreme environmental conditions incrementally over a period of 7-14 days. This process includes gradually increasing the duration of activity, intensity, and clothing or equipment such as football pads and helmets. Furthermore, any individual that is noted to have an acute illness, especially one associated with a fever, should be excluded from high risk activities until symptoms resolve.

Appropriate planning for events is essential in prevention of EHI. An updated emergency action plan (EAP) should be onsite and reviewed by all coaches and medical personnel prior to each season. This EAP should include protocols for management of C-spine injuries, transportation procedures, and weather related issues. Necessary supplies include a WBGT device and a rectal thermometer. A rectal temperature is the only reliable method for obtaining core body temperature; use of an oral, axillary, or tympanic temperature can lead to a delay in appropriate treatment. There is understandably some hesitation about the use of rectal thermometers due to privacy concerns; it is imperative that parents, athletes, coaches, and administrators be properly educated about the utility prior to each season. If environmental conditions are concerning, an ice water tub and cold towels should be available and positioned for easy accessibility.

Conclusions

Despite increased awareness, exertional heat-related illness continues to be a significant health issue in our community. Concerted efforts to improve education and prevention from organizations such as the National Athletic Trainers' Association has been beneficial, but a continual effort from health care professionals on the field, in the clinic, and in the community is instrumental in ensuring the safety of our young student-athletes.

References

1. Gilchrist J, Haileyesus T, Murphy M, et al. Heat illness among high school athletes—United States, 2005–2009. MMWR Morb Mortal Wkly Rep. 2010;59(32):1009–13.
2. Maron BJ, Doerer JJ, Haas TS, Tierney DM, Mueller FO. Sudden deaths in young competitive athletes: analysis of 1866 deaths in the United States, 1980-2006. Circulation. 2009;119:1085.
3. Kerr ZY, Marshall SW, Comstock RD, Casa DJ. Implementing exertional heat illness prevention strategies in US high school football. Med. Sci. Sports Exerc. 2014; 46: 124–30.
4. Boden BP, Breit I, Beachler JA, Williams A, Mueller FO. Fatalities in high school and college football players. Am J Sports Med. 2013;41:1108–16.
5. Nichols A. Heat-Related Illness in sports and exercise. Curr Rev Musculoskelet Med (2014) 7:355–365
6. Armstrong LE, Casa DJ, Millard-Stafford M, Moran DS, Pyne SW, Roberts WO. American College of Sports Medicine position stand. Exertional heat illness during training and competition. Med Sci Sports Exerc. 2007;39:556–72.
7. Howe AS, Boden BP. Heat related illness in athletes. Am J Sports Med. 2007;35 (8): 1384-1395
8. Casa DJ, et al. National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses. J Athl Train. 2015 Sep;50(9):986-1000.
9. Casa DJ, Armstrong LE, Ganio MS, Yeargin S. Exertional heat stroke in competitive athletes. Curr Sports Med Rep. 2005;4(6):309–317.
10. Casa DJ, Anderson JM, Armstrong LE, Maresh CM. Survival strategy: acute treatment of exertional heat stroke. J Strength Cond Res. 2006;20(3):462. AMS

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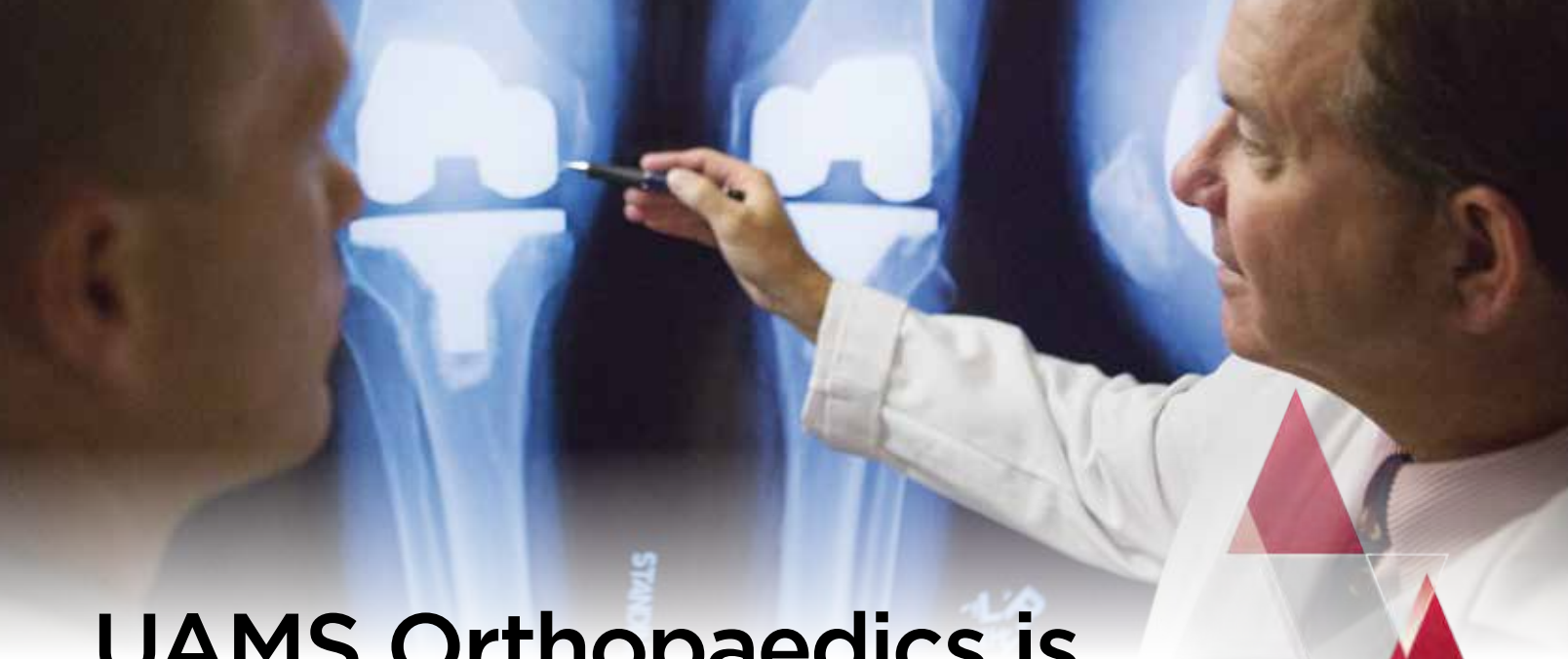
OBITUARIES

PINE BLUFF - **William Deneke, MD**, 70, passed away December 8, 2017. Dr. Deneke had a successful cardiology practice in Pine Bluff for over 37 years, retiring in 2016. He was an avid reader, a sports fan, and a gardener. He thoroughly enjoyed spending time with his beloved Great Danes, Taz and Gracie. He is survived by his wife, Sue Gordin Deneke; three sons, Dr. Matthew Deneke (Shannon); Dr. Edward Deneke (Christy); and Alex Deneke along with six grandchildren.

FORT SMITH - **Marlin Boyd Hoge, MD**, passed away November 14, 2017. Dr. Hoge was a graduate of Tulane University and received his MD in 1940. He served four years in the US Army during WWII where he spent two years in the Northwest Service Command on the Alaska Highway, and one year in the European Theater with an evacuation hospital. He was a practicing surgeon in Fort Smith from 1945 to 1993. He is survived by one daughter, Catherine N. Hoge; one son, Rollins G. Hoge; four grandchildren and four great-grandchildren.

NEWPORT - **K. Wade Falwell Sr., MD,** passed away September 28, 2017. He began working at Newport Hospital and in 1992 opened Dr. Wade Falwell, MD, Family Practice. He gave 25 years of care to many patients who considered him not only their doctor, but also a friend. He is survived by his wife, Debra; two sons, Dr. K. Wade Falwell Jr., and wife, Autumn, and W. Craig Falwell, and wife, Alesha; one daughter, Druanne Falwell and five grandchildren.

ROGERS - **Purcell Smith, Jr., MD**, passed away October 27, 2017. He attended University of Arkansas Medical School, obtaining his medical degree in 1953. He entered the Air Force and did his internship at City Hospital in St Louis, Mo. Returning to Little Rock, he joined his mentor Dr. Alan Cazort in the Arkansas Allergy Clinic where he practiced for the next 35 years. He was a long-time member of the American Medical Association (AMA) and was a 12-year Arkansas delegate to the national AMA Organizational meetings, and was president of the Arkansas Medical Society for 1981. Dr. Smith is survived by his wife Joan; his children Dr. Purcell Smith, III and wife, Susan; daughter Cynthia, and husband Dr. Thomas Youngblood; two grandchildren as well as two great-grandchildren. Additionally, he will be missed by Dr. Gustavo Zubieta, his exchange student 'son' of La Paz, Bolivia. AMS



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