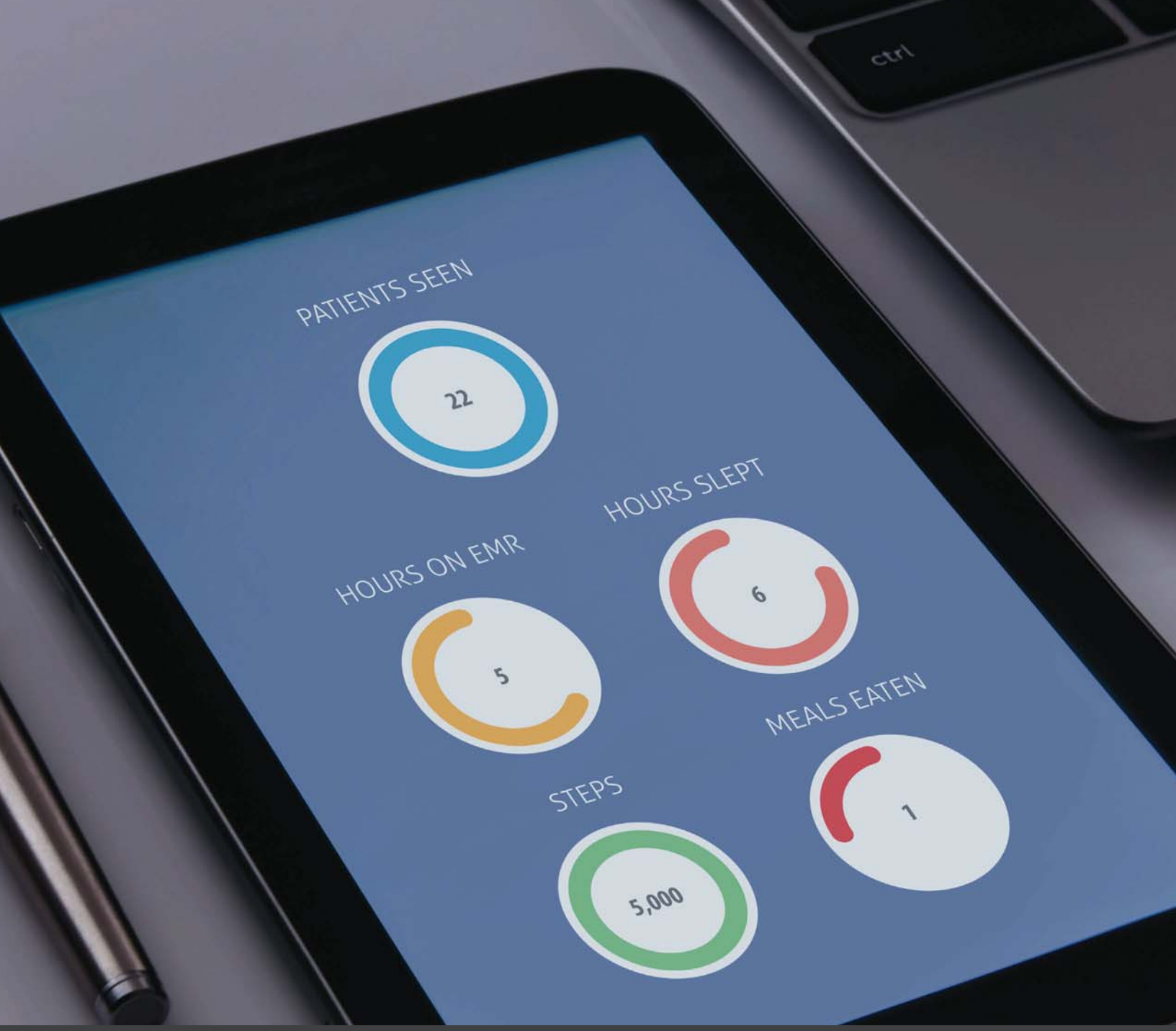
PANHANDLE HEALTH

A QUARTERLY PUBLICATION OF THE POTTER-RANDALL COUNTY MEDICAL SOCIETY

Fall 2018 | VOL 28 | NO. 4

Case Reports from Texas Tech



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On The Cover: *"Headstrong"*, by Marsha Clements.

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President's Message:
The Misdiagnosis of Obamacare

by Ryan Rush, MD

If the US health system were to become its own separate economy, it would be equivalent to the 5th or 6th largest economy in the entire world by gross domestic product. The Affordable Healthcare Act (aka Obamacare) was promised by the politicians who voted it into law to "fix" the broken American healthcare system by making it "fair" and "affordable" for all. Since Obamacare's entirely partisan passage in 2010, we physicians have witnessed sky-rocketing insurance premiums for many of our patients, while more than 25 million Americans, mostly indigent minority populations, remained uninsured. Enrollment in Obamacare exchanges fell short by millions from projected numbers, while Medicaid and Children's Health Insurance Program (CHIP) enrollment exploded by more than 17 million people above the Congressional Budget Office's estimation. This led economist Jonathan Skinner to conclude that the Affordable Care Act might more aptly be titled the Medicaid Expansion Act. Millions of formerly insured Americans were forced out of the private insurance market and relegated into the government's Medicaid program.

I anticipate that Obamacare's essential assertion, that access to health insurance will confer better health at a lower cost, will prove to be fallacious. Indeed healthcare is a societal good found in most developed countries, and some people even assert healthcare as a basic human right, but insurance and access are by no means guarantors of health. Laws are powerless to coerce a population to be healthy. Responsibility for one's own wellbeing cannot be compelled by legislation, and personal choice will always have dominion over the healthiness of that individual; the composite of the health of all individuals in a society will ultimately result in the determination of the overall health (or lack of it) for that nation. How much American treasure might be preserved if our citizens were to eat wisely, quit smoking and using recreational drugs, exercise more, lose weight, wear seat belts, not engage in promiscuous sexual behavior, maintain the family unit, and stop overindulging in alcohol? As long as our nation's principal health strategy is to supply services and expensive medications and procedures to combat ill-advised lifestyle choices, the US healthcare system will always be stressed and extraordinarily expensive to sustain. As the US healthcare system continues down its path of financial collapse and the taxpayer cannot be squeezed further to fund "quality, affordable care for all," the social experiment that is Obamacare will be scrapped by necessity, and our nation's policymakers will be forced to address personal choice and its negative consequences on our nation's health. Is it so farfetched to imagine a system that, in order for a surgical candidate to receive tax-payer subsidized elective surgery, the patient must stop smoking, lose weight, and submit to a drug screen?

This is the third installment of my critique of our nation's healthcare system, and admittedly it has so far been quite critical and rather pessimistic of the overall system. However, in the upcoming Winter addition will appear my fourth and final opinion piece as the President of the Potter-Randall County Medical Society, and I plan to leave you with a confidently optimistic message filled with hope. In closing, I would like to thank all of the contributors to this season's issue, and I hope as readers you enjoy our Fall edition.

POTTER RANDALL COUNTY MEDICAL SOCIETY (PRCMS) OFFERS HELP TO ADDICTED PHYSICIANS

If you, or a physician you know, are struggling with addiction and are unsure what to do or whom to contact, the Potter-Randall County Medical Society is here to help. We offer face-to-face confidential sessions with the PRCMS Physician Health and Wellness Committee, made up of your physician peers who know and understand recovery. Please don't struggle alone when help is a phone call or an email away. Whether you are calling for yourself, your practice partner, or as a family member of a physician, contact Cindy Barnard, PRCMS Executive Director, at 806-355-6854 or prcms@suddenlinkmail.com. Membership in PRCMS is not required.

Our Next Issue Of

Panhandle Health

Features:

The Opioid Crisis

Editor's Message:
Case Reports: The Foundation of Medical Research

by Paul Tullar, MD

Abstract:

Case Reports are an important, if less recently appreciated, preliminary form of medical research, open to all, done well here in Amarillo

Key Words:
Hippocrates, Osler, Galen, publication, medicine, documentation

This Fall issue of *Panhandle Health* is on Case Reports, as a sub-set of the medical research done at Texas Tech University Health Sciences Center at Amarillo, and is taken from the Resident –Student Research Day: juried competition and presentations from April, 2018. Research comes in many forms: original studies (especially prospective, sequential, or case-controlled), double blind intervention studies (delineating how to successfully treat a particular disease), as well as quality improvement studies. Prior to this type of study, however, one must first understand the disease, the mechanism of the disease, and have an idea what may work and what will not work (or is too dangerous to try to treat the disease). This is the role of case reports.

Ironically, case reports are becoming harder and harder for clinicians to publish today; some prestigious journals feel that their journal is too important to publish such primitive forms of research. They would like to publish only the golden standard research: double blinded, prospective, well- controlled, Institutional Research Board – approved intervention studies that show a positive result. Case reports, so long an important part of clinical advancement in medical understanding and medical care, are more and more not accepted for publication, relegated to electronic-only media, or otherwise discouraged.

In a previous issue of this Journal (Winter, 2017), our esteemed 2017 editor, Dr. Tracy Crnic (who contributed a huge amount of behind-the–scenes help for this Fall 2018 issue, in recruiting cases, helping with formatting, as well as helping with key word selection and many others) outlined well, with references, the "History of the Case Report" as part of our journal's recurring series on the "History of Medicine". With grateful appreciation to her work there, I would like to reiterate that the idea of case reports dates back to Egypt in 1600 BCE, as "knowledge gained from experience" (1). Hippocrates' work (ca. 400 BCE) improved on this by omitting any magical or theological causation, giving chronological information about symptom development and disease progression, and providing descriptions, as much as possible, in an objective way. Galen (ca. 200 AD/CE) added a personal voice to the case report, even including his own case of abdominal pain. Galen also added his understanding of anatomy and physiology, lacking from Hippocrates of 6 centuries earlier, to his case reports (2). By the 17th century, case reports developed a style, not unlike a mystery short story, leaving the final diagnosis and or successful treatment (if possible) to the end of the story. The developing structure of the report continued to evolve, to a format including a presenting complaint, demographic information, past medical history, details of an examination, initial treatment, observations of its effect, and a summary of the course (3).

Dr. Crnic's summary in that winter 2017 issue is too good not to quote in full (as follows): "As medical professionals we must hold ourselves responsible for elevating standards of care not only by teaching through publication but also striving to learn from them. Studying journals in our own and other specialties of medicine is not only a way to incorporate new material but also helps us apply standards to our decision making and treatment protocols. Case reports were among the first line of documentation of medical phenomena. They are only one way of publishing things we have learned, but remain important in beginning to catalog information. Reviewing the history represented in case reports allows us to put the breadth of medical knowledge and its change over centuries into perspective. As Sir William Osler said, "Always note and record the unusual…. Publish it. Place it on permanent record as a short concise note. Such communications are always of value" (4).

I hope that *Panhandle Health*'s readers appreciate the work, clinical care of patients, and the observation, concern, medical science and intellect that went in to these case reports from Internal Medicine, Pediatrics, Obstetrics & Gynecology, and Surgery, all here in Amarillo.

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Alliance News

by Kristen Atkins, President

The Alliance enjoyed part of a summer break for June and July but got back into the swing of things in August. On August 1, we hosted a Hard Hats for Little Heads event chaired by Audra Kirkendall. This is a TMA alliance sponsored program that was created to help prevent head injuries and to encourage safe exercise in communities. The event was done in partnership with Central Church of Christ's annual back-to-school outreach event. Alliance members gave out about 125 helmets to neighborhood children who attend Bivins Elementary. Unfortunately a storm came through with vigor, and we had to quickly pack up before raffling off the bikes. The principal offered to take the bikes and do the drawing at the school registration. The school coach took the remaining helmets to distribute to the students as needed throughout the year

For our third quarterly meeting, we will be stuffing backpaks to give to children at the Heal the City Back to School Event. The backpaks will be filled with school supplies and a book donated by Storybridge. The cost of the backpaks and the items to fill them was completely paid for by donations from our members. We are very thankful for each of you that contributed to this cause. Without support from our members, the Potter-Randall County Medical Alliance would not be able to be a part of these events in our community.

This fall we have several fun upcoming events. Be sure to attend the fall social in September. It is always a fun evening for society and alliance members to get together. We are also looking for members to be a part of the Alliance Race for the Cure team. We would love for you to come out and run to support the Susan B. Komen organization.

We are currently looking for members who are interested in leadership roles, big and small. It is a great opportunity to learn more about the alliance on a local and state level, meet other members, and support our community. Without members participating in these positions, we cannot host events and provide support to our community. Please send an email to *potterrandallalliance@yahoo.com* if you are interested and we can best match a role for you.

Save the Dates:

- **Couples Social**
  Thursday, September 6
- **Race for the Cure**
  Saturday, September 22
- **4th Quarterly Meeting**
  Wednesday, November 28

A big thank you to:

- Jamie Williams and Becca Brady for providing a meal to the Ronald McDonald House.
- Ana Rodriguez and Irene Jones for providing items to help fill the Acts Community Hygiene Closet.
- Audra Kirkendall for chairing Hard Hats for Little Heads Event.

- Sofia Maravi for chairing the Backpak Giveaway at HTC Back to School Event.

Be on the lookout for information on our upcoming events. You should be receiving emails for the events. If not, please contact us at *potterrandallalliance@yahoo.com*. Be sure to check our Facebook page as it is always up to date with information regarding events.

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Apprenticeship, Internship, and Residency:

The Start of New Methods of Teaching in the United States

by Rouzbeh K. Kordestani, MD, MPH

Introduction

As physicians, and as professionals, we tend to fall into patterns and are at fault for doing things almost on autopilot. Even though we may dispute this assertion, it holds true. For this reason, we must try to understand why certain parts of our routines are accepted as we accept the color of the sky to be blue.

Internship and residency are parts of our lives. It is an accepted fact that when we finish medical school, we move unto internship and residency. But have you ever asked why? Even though the terms "internship" and "residency" are well founded in our education and in our way of life, they do have an interesting beginning.

Like any early school of thought, the teaching of medicine and surgery was in part an apprenticeship. Prior to the 19th century, physicians, especially surgeons, were taught in "apprenticeships," where an individual was accepted to simply follow a senior physician/healer/surgeon. This apprenticeship often lasted 4-, 5-, 6- or 7- years. There was no rhyme or reason to this term of service. It was reasoned that, whenever the senior physician decided that the apprentice was ready and had gained enough knowledge, he would be allowed to move on (Please note that there were not a lot of She's). Towards the end of the 19th century, this began to change. The physician/surgery trade began to evolve into a more formalized profession. It became more accepted and more refined. The profession of medicine (medical and surgical specialties) became more regimented, with a structured educational schema and formulated standards.

Johns Hopkins and the new standards

Most of the formalized education in the medical specialties in the United States can trace its roots back to Dr. William Osler and to the Johns Hopkins medical system. Although there are older medical schools in the United States, it was Dr. Osler and the model of teaching at the newly-founded Johns Hopkins (1889) in Baltimore, Maryland that laid the foundation for the modern systems of teaching and the accepted standards we hold today.

In medicine, Dr. Osler's system of differential diagnosis, identification by disease process, systematic education of physicians by case reports and therapeutic intervention became the standard. It was Dr. Osler and his continuous education that gave modern internal medicine an actual form and standards. His rounds at the Johns Hopkins infirmary were legendary. (Of note: Osler rounded in a circular building with his residents, and so the word "ROUNDS" was coined as residents and instructors went round and round with Dr. Osler during his teaching sermons). In the field of surgery, Dr. Osler's principles were exemplified by Dr. William Halsted. Dr. Osler had seen the potential in Dr. Halsted. After completing his initial training in medical school at Columbia Physicians and Surgeons Hospital in New York, Dr. Halsted himself had endured an apprenticeship type of teaching in Germany under legendary surgeons like Kocher. Upon returning from Germany, Dr. Halsted had become an Instructor of Surgery at Columbia before being hired away to Baltimore by Dr. Osler. After bringing him to Johns Hopkins, Dr. Osler took particular attention to observe and to modify Dr. Halsted's teaching to make sure that it fit the new model advocated at Johns Hopkins. Together, Drs. Osler and Halsted helped set the standards we live by today in the fields of medicine and surgery.

"Internship" and "Residency"

By the time the Johns Hopkins model was being formulated and put into place, two additional norms were already well founded: internship and residency. It was well accepted that the trials and tribulations of first year after medical school were called internship. The actual term "intern" came from the fact that physicians, after their initial training in medical school, were to accept a year's worth of hands-on training, while being physically "interned" in the hospital environment. They were to be "kept within the grounds" much like the members of an internment camp. The intention was not necessarily to treat the individuals like slaves. However, the term has an ominous aura, one that seems to hold over most physicians. Comical or not, many physicians, when asked about their internships, may actually feel that the term is/was appropriate.

Once the internment year concluded, then the young physicians were to be assigned into their particular specialty or group. This additional education was termed residency. In its truest form, residency was the actual act of residing in a hospital or

| *continued on page 10*

medical institution for the course of the remaining 3-7 years. It was believed that the medical physicians/surgeons/healers needed to be close to the disease and to the patients with diseases to better understand the disease processes. For the younger generation of physicians, this concept is hard to grasp. However, when I asked my uncle who completed his residency at Charity Hospital in New Orleans in the late '60s, he boasted about his long hours and his times living in the hospital. He reminisced of how he brought in his suitcase on the first day of his second year and had a small room where he resided until the end of his fifth year, before going to join Dr. Cooley for his cardiac residency. He mentioned the times his wife would drop by to check on him during the four years to see where he lived, slept, breathed and became the surgeon he was. He noted that, without the training course he had endured, he could not have become the surgeon he now was. He would tell stories of how he would read about a particular surgery or procedure, such as thyroid surgery. Once comfortable, he and his posse of younger residents would scour the entire hospital and examine everyone that they could find and find patients with goiters. Then they would convince these patients to have surgery. They would then have a series of thyroid operations ready to go. He admitted that the first few operations involving that particular disease would be hard. Then by the fourth or fifth thyroidectomy, he would gain his proficiency and his skills. In this way, they would become the surgeons they were meant to be. They would do this with all of the disease processes like hernias (herniorrhaphy), gall bladders (cholecystectomy), appendix (appendectomy), trauma, thyroid cancer (thyroidectomy), and other bodily ailments. They spent as much time as was needed to become proficient and to meet the standards that they expected of themselves and the standards that were expected of them by their teachers. Only by being present for each and every case were they able to meet these high marks. This is in stark contrast now with the current time limited teaching. It leaves a great deal unsaid and undone. The new form of limited engagement internship and residency is a far cry from the live-here-until-you-learn mentality that formulated the first apprenticeships/internships/residencies.

Resident Education Becomes Formalized

Dr. Halsted's teachings held fast to three core principles. In surgery, he noted: 1) That residents must have intense and repetitive training under the supervision of a senior skilled surgeon; 2) That the resident surgeon must acquire an understanding of the scientific basis of surgical diseases; and 3) That the resident surgeon must acquire skills in patient management and procedural operations with increasing complexity with graded responsibility and eventual independence. These three principles were often copied as other institutions tried to follow the Hopkins model. As the teachings in Hopkins were being copied elsewhere, the Council of Medical Education, a formal body, conducted a survey about medical teaching. Its head, Dr. Abraham Flexner, helped to publish the report and began to set standards for formalized teaching of residents in the United States. The Flexner report, published in 1910, assessed the quality and the standards of most medical schools extant at that time. Because of the report, 46 of the medical schools open at that time were either closed or were forced to merge with others to meet the higher standards. The report also did much to set the curriculum for medical schools in the coming years, both in the United States and in Canada. Soon afterwards, the first national meeting of post-graduate medical and surgical residents convened to discuss standards and the curriculum of both internships and residencies. Not long after this meeting, the surgical groups from this outing joined and formally became known as the American College of Surgeons (ACS). The ACS began to function starting in 1913.

In 1914, the American Medical Association (AMA) began to formally accept programs for medical education. In that year, the AMA began to certify hospitals for formalized education for internships and residencies. In the following years, specialty boards were created as a way to assure the public of the high standards in each medical and surgical specialty. Between the years 1920 to 1940, thirteen medical boards were accepted and certified by the AMA. In 1933, five of the original boards, including dermatology and gynecology, helped to form the American Board of Medical Specialties (ABMS).

Conclusion

Like every story, there is a beginning and an ending. In this short account, we have tried to recap the beginning of the story of medical education in the United States. We have the unique privilege, here, of being active participants in the story ourselves, as medical students, interns, and residents, and as senior physicians. Over the last two decades, as medical education has been transformed in the United States and continues to change, the story we have started to tell here is unfolding as we speak. As these changes to the core education scheme and the mandated hours of training become ingrained, we will see how these changes will affect our medical brothers, sisters and colleagues. We will soon be witness to the harvest of these changes to the medical education system. We will live through these changes and see more as they come. It is with much interest and anticipation that we tell the story of the beginning, not knowing how the story will end.

Continuing Care of the NICU Graduate

by Robert B. Alexander, MSIII; Jay R. Argue, MSIII; David A. Carlsen-Landy, MSIII; Alyssa Byrd, MSIII; Elizabeth Waldrop, MSIV; William Sessions, MSIV; Oyo Olanrewaju, MD; Sumesh Parat, MD; Mubariz Naqvi, MD

Key Words:
Infant; Newborn; Birth Weight; Aftercare; Intensive Care Units, Neonatal; Infant, Premature; Pediatricians; Infant; Extremely Low Birth Weight

Abstract:

1 in 10 babies are born prematurely in the United States. Many of these infants have higher risks of life-threatening conditions. These significantly sick children are sent to the NICU for care. While NICU care is extensive, long term care must be continued by a family care specialist in order to achieve the highest quality of life for NICU graduates. This case discusses two such infants' prenatal care, delivery, inpatient care, and plan for future follow up.

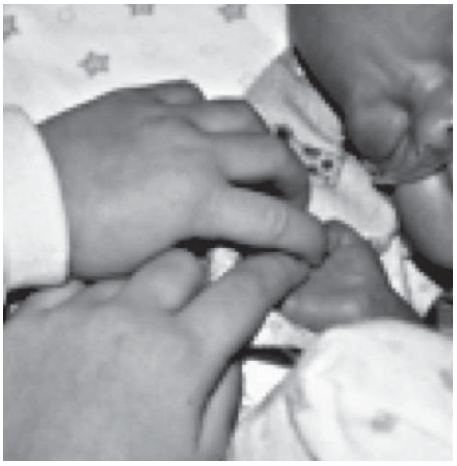
Introduction:

Approximately 4 million babies are born in the United States per year and roughly 1 in 10 of those babies are born premature. Prematurity potentiates complications in the neonate spanning most organ systems. A classification of premature neonates is by weight, dividing the infant into birth weight categories of low birth weight, very low birth weight, and extremely low birth weight. The lower the birth weight, the greater the potential for complications and the more likely the neonate is to be admitted into the NICU. Once the premature infant is discharged from the NICU, it is the responsibility of the primary care pediatrician to assume care of the infant and to provide follow-up care for the collective complications of prematurity that may have transpired.

Case Report:

The mother of our patient was a 33-year-old mother who received adequate prenatal care. All of her prenatal screens were negative. She had previously been diagnosed with hypothyroidism for which she took levothyroxine. She was diagnosed with twin gestation, took prenatal vitamins but no other medications during pregnancy, and denied use of other medications, smoking, drinking alcohol, or using illicit drugs. She had spontaneous preterm premature rupture of membranes for Twin A at 19 weeks and was admitted to the hospital at 24 weeks and received dexamethasone, ampicillin, and erythromycin. Twin A's umbilical cord prolapsed at 24 2/7 weeks, and, at that time, an emergency cesarean section was performed to deliver both babies with the NICU team in attendance. Twin A weighed 640g and received Apgar scores of 3-7. Twin B weighed 690g and received Apgar scores of 2-7. Twin A developed respiratory distress shortly after birth, which progressed to respiratory failure secondary to severe lung hypoplasia and premature rupture of membranes. He expired at 12 hours of age. Twin B developed multiple clinical problems in the NICU: pulmonary interstitial emphysema, pulmonary hemorrhage, bronchopulmonary dysplasia, hyperbilirubinemia, electrolyte abnormalities including hyponatremia and hyperkalemia, late-onset sepsis due to *staphylococcus epidermidis*, persistent ductus arteriosus, total parenteral nutrition, osteopenia of prematurity, inguinal hernia, iatrogenic neonatal abstinence syndrome secondary to prolonged opioid and benzodiazepine therapy requiring methadone for detoxification, anemia and thrombocytopenia, intraventricular hemorrhage, periventricular leukomalacia, and non-hemorrhagic ventriculomegaly. Twin B was discharged from the NICU on day 109 at post conception age 39 weeks. For corrected age, he weighed 2834 g (10^{th} %), measured 49 cm length (50^{th} %), front-occipital circumference 34 cm (50^{th} %); his hearing screen was normal, and his retinopathy of prematurity screen was stage 2, zone 2. After dismissal, the patient's care was transferred to the primary care pediatrician. The patient received all 2 month immunizations as well as Synagis prophylaxis. He was fed via breast milk every 3 hours for 15-20 minutes. His medications include PolyViSol with iron, calcitriol, home oxygen therapy, home apnea monitor, and breathing treatments.

Images: Permission to publish images on file.



Baby JM at 24 week gestation in the NICU

Follow Up:

The patient was dismissed from the NICU 9 years ago and was followed by the high-risk clinic associated with Texas Tech Pediatrics in Amarillo for 2 years after NICU dismissal. He continues to

| *continued on page 12*

Baby JM Present Day

gain weight and is progressing well. His ophthalmologist follows his visual status as he has to wear glasses for visual acuity, and the bronchopulmonary dysplasia has resolved. He is currently in the 2nd grade and is very interactive with his peers despite having a motor disability and continues to follow up with his primary care pediatrician.

Discussion:

Premature birth is defined as the birth of an infant prior to 37 weeks gestational age. Prematurity can be further differentiated into late preterm, born between 34 and 36 weeks of pregnancy, moderately preterm, born between 32 and 34 weeks of pregnancy, very preterm, born less than 32 weeks of pregnancy, and extremely preterm, born at or before 25 weeks of pregnancy. Most preterm births occur during the late preterm stage. The risk factors for preterm delivery include previous premature birth, multi gestational pregnancy, interval of less than 6 months between pregnancies, conception through in vitro fertilization, anatomical problems of the uterus, cervix, or placenta, cigarette smoking, infections of the amniotic fluid, maternal hypertension and diabetes, history of multiple miscarriages or abortions, and physical injury or trauma. In addition, women of African descent are more likely to experience premature birth; however, the reason is still unknown (2).

The complications of prematurity can be broadly classified as short-term and long-term complications. In the first few weeks of life, a preterm infant can develop breathing problems secondary to an immature respiratory system, bleeding in the brain due to over perfusion of an immature brain, persistent fetal circulation, inability to regulate body temperature, necrosis of the bowel leading to severe gastrointestinal disease, and hematologic abnormalities requiring intervention. Long term complications of prematurity manifest at differing times throughout childhood and adolescence. Preterm infants are at an increased risk of developing cerebral palsy due to an immature newborn brain, impaired learning, vision problems secondary to retinopathy of prematurity, hearing and dental problems, behavioral and psychological problems, developmental delay, and chronic health issues such as infections, asthma, and feeding problems. In addition, premature infants are at an increased risk of sudden infant death syndrome compared to term infants (4).

Generally, the earlier the baby is born the higher the risk of complications and typically the lower the gestational age, the lower the birth weight of the neonate. The majority of these extremely low weight infants are transferred to the NICU immediately after birth to address emergent concerns such as respiratory distress and inability to regulate temperature and hydration. Close surveillance of these low birth weight babies in the intensive unit is prudent to minimize morbidity, and anticipatory guidance for parents is essential in eliciting good outcomes. In order for an infant to be discharged from the NICU, the infant and caretaker must follow the AAP guidelines, outlined in Table 2.

A premature infant discharged from the NICU requires special considerations when care is transferred to the primary care pediatrician. These points of importance can be divided into biological factors, such as the complications outlined in Table 1, and any interventions performed during the infant's stay in the NICU such as transfusions and surgery. Considerations should also be made for social and environmental factors for the infant including parental education and socioeconomic status, stressors in the household, and insurance for the ability to follow up care, parent-infant bonding, and infant growth and nutrition (5). Communication of the NICU team at discharge to the primary care pediatrician is essential in minimizing poor outcomes resulting from non-disclosure of critical information regarding the infant's hospital course. For parents, the NICU may be a terrifying experience, far from their hopes and dreams attached to a normal birth experience. This stressful situation triggers a grieving response, creating a major strain on family dynamics and relationships (7). The role of the primary care pediatrician once information has been transferred and open communication with the NICU team has been established may require more attention and consideration than a typical patient. Ideally, the pediatrician would visit the infant and infant's family in the NICU and become acquainted with the neonatal providers that have established care over the new patient. They should review the discharge summary and schedule an office visit one week after the infant's NICU dismissal to address status and lingering concerns. The pediatrician should examine and analyze the infant's medical conditions and serve as the medical home during the coordination of care between subspecialists that

the infant may require (8). It is particularly important to monitor the growth of these infants until 24-30 months corrected age and to assess their nutritional status as their needs differ from the term neonate, typically requiring specially prepared formulas with additional protein, calcium, phosphorus, and vitamins until 9-12 months corrected age (9). An augmented diet has been shown to promote catch-up growth, increase bone mass, and result in better neurological outcomes compared to an ordinary diet for term neonates (10). In surveillance of these infants, the pediatrician should plot the infant's length, weight, and head circumference on the growth chart, monitor for neurodevelopment problems using corrected age, screen for anemia at 2, 6, and 12 months of corrected age, and provide close and frequent follow up appointments. Neurodevelopmental issues such as cognitive delay, IQ impairments, autism spectrum disorders, attention deficit disorders, and interpersonal connection problems should be monitored as they have been shown to have increased incidence in preterm infants (11). However, these neurodevelopmental deficits manifest at differing ages and therefore must be assessed throughout childhood and adolescence (12). Beyond assessing the needs of the infant to grow and develop, another crucial component of care is support of the parents including discussion of parental concerns, education with anticipatory guidance, and potential referral to Early Childhood Intervention, Women Infants and Children, and support groups such as Parents of Preterm Infants.

Conclusion:

Some complications of prematurity in preterm infants linger after discharge, into childhood and, further, into adulthood. The care of the premature infant after discharge from the NICU by the primary care pediatrician is essential in ensuring optimal health for the infant in the forms of: close monitoring of the infant, acting as the medical home for subspecialist information, and providing support to the infant's parents.

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Enhancing Parent-Newborn Bonding in the Nursery

by Alyssa Byrd, MSIII; Robert B. Alexander, MSIII; Jay R. Argue, MSIII; David A. Carlsen-Landy, MSIII; Mubariz Naqvi, MD
Department of Pediatrics

Key words:
Texas pediatrics, pediatrics, parent newborn bonding, survey, skin to skin, parent heart auscultation, parent confidence

Abstract:

Texas Tech pediatrics at Northwest Texas Hospital System in Amarillo, Texas currently practices giving "Mom/Dad of the Day" cards to all new parents, offering the opportunity for fathers to auscultate the newborn heart sounds and encouraging maternal and paternal skin-to-skin contact. This study aims at assessing the effect of these initiatives on parental reception and parent-newborn bonding. This study implemented the use of two anonymous surveys, one assessing both parental views on the impact of the "Mom/Dad of the day cards" and auscultation of the newborn heart sounds, while the second one was given to just the fathers to assess the effects of skin-to-skin contact. Survey results showed statistically significant positive responses by the parents for subjective improvement in fetal sleep and feeding as well as parental confidence and preparedness for taking care of their newborn, and they positively supported these implemented practices. Additionally, fathers reported feeling more connected to their newborn after skin-to-skin care. In conclusion, these practices improve parent mood during the stressful perinatal period and increase parental confidence in newborn care that will benefit the infant. Practices such as these are well received and can be feasibly adopted in more hospitals to improve patient quality of care.

Introduction:

Texas Tech pediatrics at Northwest Texas Hospital System in Amarillo, Texas currently practices giving "Mom/Dad of the Day" cards to all new parents, offering the opportunity for fathers to auscultate the newborn heart sounds, and encouraging maternal and paternal skin-to-skin contact. Studies have already shown that fathers who practiced skin-to-skin care found it enhanced and strengthened their paternal role, decreased parental anxiety,

| *continued on page 16*

increased paternal protectiveness, and increased paternal confidence to care for his neonate. However, the effect of these initiatives on parent-newborn bonding and parental reception has yet to be determined.

Materials and Methods:

New parent(s) who have a neonate under the care of Texas Tech pediatrics at Northwest Texas Hospital System in Amarillo, Texas from February 2017 to June 2017 were asked to fill out two anonymous surveys. The first titled "The Impact of Offering Mom/Dad of the Day Cards and Newborn Heart Auscultation to Augment Parents' Involvement and its Impact on Their Stress Level" is a 7-question survey with 2 questions for only the father to answer. The second titled "Skin-to-Skin Research Survey" is a 7-question survey for only the father to fill out. Survey included questions based on "Yes" and "No" responses as well as a 4-point Likert scale. Data was analyzed via Z-test on one population mean and Confidence Intervals.

Figure 1:
"Mom/Dad of the Day" Cards

Results: Survey results showed statistically significant positive responses by the parents for subjective improvement in fetal sleep and feeding as well as parental confidence and preparedness for taking care of their newborn. 81.2% of fathers reported feeling more connected to their newborn after skin-to-skin care. Additionally, these practices are desired by parents, with 96% fathers recommending that the hospital routinely offer opportunities for heart auscultation, and 94% parents recommending "Mom/Dad of the Day" cards for all future parents in the hospital.

Figure 2:

"The Impact of Offering Mom/Dad of the Day Cards and Newborn Heart Auscultation to Augment Parents' Involvement and its Impact on Their Stress Level". The survey was scored on a Likert scale with 1 being "not at all", 2 being "not sure", 3 being "a little", and 4 being "very much". Positive responses were defined as "a little" and "very much" Asterisks mark results that were statistically significant based on a Confidence Interval >3. n = 150.

Figure 3:

"Skin to Skin Survey" Results. Asterisks mark results that were statistically significant based Z-test for one population mean. "Other" responses were included write-in responses that were not "Yes" or "No". n = 55.

Conclusion: "Mom/Dad of the Day" Cards and involving the father in auscultating heart sounds and skin-to-skin care not only improve parent mood during the stressful perinatal period, but also increase confidence in newborn care that will benefit the infant. Small, non-medical initiatives such as these are well received and can be feasibly adopted in more hospitals to improve patient quality of care.

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Figure 2:

Question	Rate of Positive Responses	Average
How much does the "Mom/Dad of the Day" card help you feel more empowered for the care of your newborn?	83%	3.33*
How much does skin-to-skin care or kangaroo care assist you in connecting with your newborn?	96%	3.91*
After your hospital stay and education, how much do you feel that we have prepared you for taking care of your newborn?	95%	3.91*
How much does listening to your baby's heartbeat help you feel more connected to your baby?	96%	3.97*
How much do you like listening to your baby's heartbeat?	98%	3.91*

Figure 3

Question	Yes (%)	No (%)	Blank/ Other (%)
Have you ever practiced father skin-to-skin care?	40	54.5	5.5
Did your baby breastfeed better after father skin-to-skin care?	65.5*	18.2	16.3
Did your baby sleep better after father skin-to-skin care?	87.3*	3.6	9.1
Do you feel more confident and less stressed as a new father after practicing skin-to-skin contact with your infant?	90.1*	3.6	6.3
Do you feel more connected to your baby after skin-to-skin contact?	81.2*	3.6	15.2

Salpingitis Isthmica Nodosa: A Case Report

by Rebecca Brady, MSIII; Ben Aziz, MSIII; Victoria Bzik, MD; Robert Kauffman, MD
Department of Obstetrics & Gynecology, Texas Tech University Health Sciences Center at Amarillo

Abstract:

A case report of bilateral salpingitis isthmica nodosa is reported, suspected by laparoscopy with chromotubation, diagnosed by hysterosalpingogram (HSG), and followed up with post salpingectomy radiographic hysterosalpingography. Literature search, physiology, and management are discussed. HSG radiograph is presented.

Mesh Terms/ Keywords:
Salpingitis, Hysterosalpingography, Fallopian Tubal Diseases, Salpingectomy, Laparoscopy

Introduction:

The fallopian tubes are responsible for natural fertility by means of picking up the ova, then transporting ova, sperm, and the embryos once fertilization occurs in the ampullary portion of the tube (1). The normal function of the fallopian tubes can be impaired by pelvic inflammatory disease, particularly *Chlamydia trachomatis*, leading to post-inflammatory fibrosis, loss of luminal ciliated cells, and pelvic adhesions. Salpingitis isthmica nodosa (SIN) is a rare condition associated with nodular thickening of the tunica muscularis of the isthmus with diverticular pouching caused by inflammatory mediators (2). It is bilateral in 85% of cases (3).

When present, the diaganosis can be detected on hysterosalpingography. SIN is clearly associated with infertility, subfertility, and ectopic pregnancy (4). We report a unique presentation of a patient with a prior ectopic pregnancy, who was found to have SIN on the contralateral tube.

Case Report:

A 31 year-old G1P0A1 previously had undergone left salpingo-oopherectomy for a twin abdominal pregnancy. Her past medical history was significant for asymptomatic *Chlamydia trachomatis* infection as a teenager, which was detected by routine culture on a contraception follow up examination. Patency of the remaining right tube could not be ascertained at the time of laparoscopy by chromotubation with methylene blue. She had an unremarkable postoperative course. Three months postoperatively, she underwent hysterosalpingography performed using water-based media *(Isovue 300)* to assess for tubal patency. The uterus was normal, but the proximal right tube demonstrated numerous small diverticula (arborization), consistent with SIN. Distal tubal occlusion with distal hydrosalpinx was noted on that side.

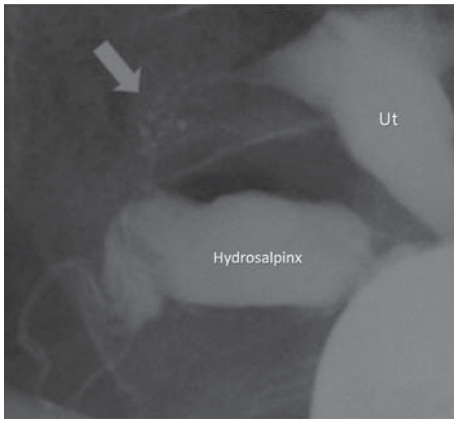
Microsurgical tuboplasty carries a poor prognosis for future fertility in women with SIN. Accordingly, she was advised to undergo surgical right salpingectomy to maximize success with future *in vitro* fertilization and embryo transfer (IVF-ET).

Management

At the time of the original left salpingo-oophorectomy, chromotubation was attempted and there was no spill appreciated from the left rib of the right fallopian tube. Hydrosalpinx and fimbrial agglutination, or partial distal tube blockage, were deemed present from a clinical standpoint.

The patient did not experience any postoperative complications. She returned for a hysterosalpingogram. Visualization of the uterine cavity was accomplished promptly with Isovue 300 and the left fallopian tube filled only proximally, as expected for history of left salpingectomy. The right tube filled, but there was an appreciable hydrosalpinx noted without spill after continued pressure on the right side. The films were studied and revealed salpingitis isthmica nodosa, evidenced by proximal nodularity at the isthmus. The patient was advised that right salpingectomy should be attempted before future IVF procedures as she suffered from not only nodularity and diverticulosis of the proximal fallopian

| *continued on page 18*



*** Figure 1. Salpingitis isthmica nodosa (arrow) and hydrosalpinx in patient with prior history of *Chlamydia*.**

tube but also complete distal occlusion resulting in hydrosalpinx. These findings limit the ability of the secretory and ciliary cells of the tubal lumen to assist in natural fertility and also increase the risk for embryotoxic hydrosalpingeal fluid to invade the endometrial cavity and disrupt future pregnancy.

Discussion and Conclusions:

Salpingectomy of an obstruc-ted fallopian tube improves the chance of successful outcomes with IVF-ET. This is likely due to inflammatory cytokines from the tube which "bathe" the uterine environment, making blastocyst implantation unlikely. Confirmation of salpingitis isthmica nodosa requires HSG since the diverticular pattern associated with SIN is not typically obvious even at laparoscopy. In this case, her *Chlamydia* infection had been asymptomatic, emphasizing the importance of routine screening of young women for this pathogen. SIN is an uncommon finding even in the presence of hydosalpinges, and careful examination of hystersalpingogram films by the radiologist and infertility specialist is paramount, since salpingectomy followed by IVF-ET is the optimal course of action for successful fertility.

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Intractable Hypernatremia Due to Diarrhea in an Elderly Person

by Diane Srilinta, MSIII; Karen Cutts, MD; Tarek Naguib, MD

Abstract:

We present a case of intractable hypernatremia in a patient with a history of traumatic brain injury. Central diabetes insipidus due to CNS injury was ruled out, and the etiology was eventually explained by severe loss of hypotonic fluids due to previously unrecognized voluminous diarrhea.

Introduction:

Hypernatremia results from relative deficit of total body water in relation to total body sodium. The mechanism is a loss of hypotonic fluids. Age related physiologic changes, including reduced total body water, decreased oral intake, renal dysfunction, and gastrointestinal fluid loss, predispose the geriatric patient to the development of hypernatremia. Although hypernatremia due to diarrhea is much more common in children than adults, it is an important consideration in elderly persons, especially in those using diuretics and osmotic laxatives. Elderly persons normally have less total body water, making them vulnerable to hypernatremia. This case highlights the importance of considering diarrhea in the differential diagnosis of hypernatremia in geriatric patients.

Case report:

A 76-year-old man underwent surgical evacuation of subdural hematoma after a fall while on anticoagulation for recent pulmonary embolism. During recovery, he required tube feed management due to poor responsiveness, intravenous vancomycin and ceftazidime for urinary infection, levetiracetam for seizures, and dexamethasone for brain edema. He had a past history of primary hyperparathyroidism with hypercalcemia.

Two weeks after surgery, laboratory studies showed serum Na of 151 mmol/L, K of 4.0 mmol/L, Cl of 113 mmol/L, BUN of 45 mg/dL, Cr of 0.45 mg/dL, and ammonia of 149 µmol/L. Lactulose was started to control ammonia levels along with hydrochlorothiazide to control edema and help decrease sodium level. Due to persistent high sodium of 150 mmol/L and ammonia of 114 µmol/L, lactulose was continued and both intravenous dextrose water and HCTZ were increased.

A water deprivation test failed to increase urine osmolality after 4 mcg of intravenous desmopressin. Subsequently, the nursing staff reported substantial diarrheal output and a rectal tube was applied. Voluminous stools in excess of 2 liters at times pointed to the source of hypotonic fluid losses. Aggressive dextrose water to match the volume of diarrhea resulted in correction of hyponatremia. Withholding lactulose and decreasing tube feeding rate corrected his diarrhea, obviating the need for continued fluid replacement.

Discussion:

Hypernatremia (defined as serum sodium > 145 mmol/L) takes place when there is a relative deficit of total body water in relation to total body sodium (1). Causes include low free water intake or free water losses. Inadequate release of vasopressin or lack of kidney response to it can also cause hypernatremia. Urine osmolality can help distinguish between various causes of hypernatremia since it reflects the amount of water excretion in urine. For example, central diabetes insipidus is associated with low urine osmolality due to water losses in urine, akin to diabetes mellitus albeit from a different reason. In contrast, extra renal fluid losses lead the kidneys to respond by retaining water, causing high urine osmolality (2).

Hypernatremia in elderly patients is often attributed to hypotonic fluid losses such as diarrhea, vomiting, gastric tube drainage, and the use of osmotic agents like lactulose (1). Other causes of hypernatremia in the elderly include impaired renal concentration ability, intravascular volume depletion, and inadequate fluid replacement (2).

Elderly persons have total body water near 50%, whereas young adults have 60%, and newborns have 70% (3). Thus, the body's buffering capacity against dehydration is reduced with age. Since diarrhea is difficult to quantify, it is more likely to be missed as an etiology until late in the course of hypernatremia, as in our case.

In the elderly, there is impairment of compensatory mechanisms such as the renal capacity to concentrate urine (reabsorb water) and the thirst mechanism that is impaired in dementia or brain injury like our patient. Even healthy elderly subjects do not report thirst as often as their younger counterparts and do not drink adequate water to dilute plasma to pre-deprivation levels (4).

Managing hypernatremia should include frequent measurement of serum electrolytes, osmolality, BUN, and creatinine levels. Additionally, urine sodium and osmolality should be measured (5). Increased BUN, and low urine sodium are all laboratory signs that point to volume depletion as a cause of the hypernatremia. A medication review should be done to assess for reversible causes of free water loss, such as excessive gastrointestinal fluid loss due to laxative use. Correcting hypernatremia should be slow to avoid brain edema. A rate of 0.5 mmol/hr. during the first 24 hours, with the goal of complete correction to normal range within 3 days, improves cognition (5).

In conclusion, hypotonic fluid loss secondary to diarrhea should be considered in the evaluation of hypernatremia, especially in the elderly. Laboratory findings cannot point to the correct diagnosis without the appropriate history of diarrhea or other fluid losses. Age related changes prevent older persons from compensating for diarrheal losses, and care should be taken to identify and appropriately treat diarrhea in this population.

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Cannabinoid Hyperemesis Syndrome in Pregnancy

by Hyunyoung G. Kim, MSIII; Jeremiah Moon, MSIII; Heather Dixon, DO; Paul Tullar, MD
Department of Obstetrics and Gynecology, Texas Tech University Health Sciences Center, Amarillo, TX

Abstract:

Cannabinoid hyperemesis syndrome is a condition characterized by chronic cannabis use and cyclic episodes of nausea, vomiting, and abdominal pain, relieved by compulsive bathing. The syndrome is likely to be underdiagnosed in pregnant women due to its similarity with hyperemesis gravidarum in presentation. We report a 20-year-old pregnant woman with multiple admissions for recurrent nausea and vomiting who was observed to be taking frequent hot showers. Without other identifiable causes, she was diagnosed with cannabinoid hyperemesis syndrome and managed with antiemetics and abstinence. Abstinence from cannabis use is highly recommended in pregnant women due to its potential harm in fetal development and stimulation of intractable nausea and vomiting. Recognizing the symptoms and proper history taking prompt early diagnosis, allowing timely and adequate treatment.

Key Words:

Cannabinoid hyperemesis syndrome, hyperemesis gravidarum, nausea, cannabis, marijuana, pregnancy, prenatal care.

Introduction:

Marijuana is the most commonly reported illicit drug used during pregnancy, with estimated prevalence of 2-5% and up to 15-28% in young, urban low socioeconomic women. With recent legalization of marijuana in several states in the U.S., the prevalence of marijuana use during pregnancy is expected to rise.

Chronic and heavy marijuana use can lead to a condition called cannabinoid hyperemesis syndrome (CHS). It presents with symptoms of recurrent nausea, vomiting, and abdominal pain that are temporarily relieved with hot bathing. While the syndrome can also arise during pregnancy, diagnosis of CHS is often delayed due to the nonspecific symptoms of nausea and vomiting, which also occurs in early pregnancy and with hyperemesis gravidarum.

The combination of severe vomiting, nausea, and frequent hot showers can lead to serious complications such as volume depletion, weight loss, and esophageal rupture. Furthermore, frequent hot showers over long periods of time may increase risk of fetal neural tube defects, gastroschisis and omphalocele. Increased body temperature from these hot showers may be associated with preterm labor and epilepsy as well.

Case Report:

20-year-old G7 P0A6, at 14+3/7 weeks gestation by 8-week ultrasonography, with history of bipolar disorder and depression, presented with unremitting N/V for several weeks. She also reported intermittent hematemesis, epigastric pain, and mild diarrhea. Review of systems was otherwise normal. She had a two-year history of multiple emergency department visits for the same issue. She was diagnosed with hyperemesis gravidarum.

Intravenous (IV) hydration and antiemetics, including ondansetron, famotidine, and metoclopramide, were given. She had mild hypokalemia, which was replaced with IV and oral potassium. Her condition slowly improved, and she tolerated oral intake by hospital day (HOD) #6.

At 22+4/7 weeks gestation, she presented again with same complaint of N/V. Her providers noticed her repeatedly taking frequent hot showers; their suspicion for CHS were raised. Urine drug screening (UDS) was performed and was positive for cannabinoids. The patient was informed that this was possibly related to her cannabis exposure. She remained abstinent throughout the hospital stay and was continued on IV fluids and antiemetics.

On HOD #3, vast improvement was noted, and the patient tolerated regular diet. She was discharged home with promethazine, ondansetron, and doxylamine succinate-pyridoxine hydrochloride. Patient was counseled on completely dis-

continuing all exposure to cannabis and voiced understanding. UDS remained negative at subsequent prenatal visits.

At 40+1/7 weeks gestation, the patient delivered vaginally a live female infant (3.19 kg) with APGAR score of 8/9 without any complications. The mother and baby were discharged home on the second postpartum day.

Discussion:

While marijuana use in pregnancy is expected to rise due to increase in its liberalization and popularity, there has been lack of studies on its pharmacokinetic effect on pregnant women and their fetuses. Current preliminary data suggest that delta-9-tetrahydrocannabinol (THC), the main active ingredient in marijuana, crosses the placenta and that prenatal exposure to THC may negatively impact the child's future higher cognitive function as well as psychological development. Therefore, it is recommended that pregnant women refrain from marijuana use until further information is available.

Although cannabis is usually known for reducing nausea and vomiting, various theories have been proposed to explain the pathophysiology of CHS. While THC produces an antiemetic effect by activating the G-protein coupled cannabinoid 1 (CB1) receptors in the dorsal vagal complex, its greater effect on CB1 receptors in the enteric nervous system, which decreases peristalsis and gastric emptying, may induce emesis. There also is an evidence that synthetic marijuana may cause CHS by over-activating the CB1 receptors. In addition, THC's tendency to collect in fat tissue may explain why chronic, heavy users of marijuana are more prone to CHS. On the other hand, non-psychoactive components of marijuana, such as cannabidiol and cannabigerol, may contribute to vomiting. In their study, Parker et al. showed that cannabidiol acts as an antiemetic in low levels and pro-emetic in higher levels in shrews.

As seen with our patient, frequent hot bathing has been reported to relieve symptoms of nausea and vomiting in CHS. One theory posits that dilation of cutaneous vessels may decrease blood flow to the cannabinoid-vasodilated splanchnic vessels, which may reduce nausea and vomiting. Frequent hot bathing may exacerbate dehydration, leading to hypotension and increased risk of falls. Increased dehydration with heat exposure diverts blood flow to the skin, away from the maternal organs and fetus, and increases antidiuretic hormone and oxytocin release, inducing preterm labor. Moreover, consequent maternal weight loss further increases the risk of preterm labor and small gestation for age. Maternal use of hot tubs for over 30 minutes during the first trimester—which many patients with CHS greatly exceed—has also been associated with neural tube defects, esophageal atresia, omphalocele, and gastroschisis.

Dehydration is a common consequence of repetitive nausea and vomiting; therefore, fluid resuscitation is usually required in the CHS patients. In alleviating symptoms of CHS, traditional antiemetic medications (ondansetron, promethazine, metoclopramide) have been reported to be fairly ineffective. Benzodiazepines, haloperidol, and capsaicin have been shown to be effective in the management of acute CHS and tricyclic antidepressants in chronic CHS. While our patient was managed with antiemetics, earlier diagnosis of CHS and treatment with benzodiazepines or haloperidol might have led to faster resolution of symptoms. Further studies are needed to define optimal pharmacologic treatment.

The best treatment, nevertheless, is cessation of marijuana use. Education and counseling are often necessary to prevent patients from treating their symptoms with more marijuana, which can exacerbate and prolong the episodes of emesis.

Conclusion:

Chronic or excessive marijuana use during pregnancy can induce CHS and can pose potential health risks for both the mother and fetus. The diagnosis CHS in pregnancy can be challenging, since it presents with repetitive nausea and vomiting, which overlap with symptoms of hyperemesis gravidarum in early pregnancy. Awareness and recognition of this syndrome will prompt early and appropriate management, avoidance of unnecessary workup and cost reduction, and lessening of provider frustration with inefficacious treatment.

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Twin Ovarian Pregnancy with Abdominal Extension: A Case Report

by Ben Aziz, MSIII; Victoria Bzik, MD; Rebecca Brady, MSIII; Robert P. Kauffman, MD
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Abstract:

A twin ovarian ectopic pregnancy, with abdominal extension is reported as a case report. Literature search as well as surgical treatment and resolution is discussed.

MesH Terms/ Keywords:
Pregnancy, Pregnancy twin, Pregnancy Ectopic, Abdomen Diseases

Introduction:

Ectopic pregnancy is defined by blastocyst implantation at a site other than the uterine cavity. It occurs at a rate of 20.7 per 1,000 reported pregnancies (1). Of these extrauterine pregnancies, 70% occur in the ampulla of the fallopian tube, with the isthmus and fimbrae the next most common sites (2). Abdominal pregnancies, however, are a rare occurance, accounting for only 1.3% of all ectopics (2). Thus, the overall incidence of abdominal pregnancies is a mere 0.02% of all pregnancies. Attesting to the rarity of such a pregnancy, only 7 cases of twin abdominal pregnancy are reported in the literature (3). Because there are no distinguishing clinical symptoms, diagnosis of abdominal pregnancy is missed in 60% of cases prior to surgical exploration (4). We present a rare twin abdominal pregnancy that was suspected on ultrasound and verified at surgery.

Case Report:

A 31 year-old female G1P0 at 8 4/7 weeks gestational age based on certain last menstrual period presented for viability ultrasound. She complained of some vague left lower quadrant pain that did not require simple analgesics. She denied vaginal bleeding. Her past medical history was significant for chlamydia as a teenager that was asymptomatic at the time of screening. After treatment, subsequent cultures were negative. Transvaginal ultrasound showed a thickened endometrium without a gestational sac. In the left adnexa, there were two gestational sacs present with two fetal poles measuring 17.3 mm and 19.4 mm and cardiac activity in each (Figure 1), suggestive of monochorionic, diamniotic (monozygotic) pregnancy. The pregnancies seemed to be located on the left ovary. The right ovary was normal in appearance. Urgent operative laparoscopy was recommended due to a twin non-tubal ectopic pregnancy.

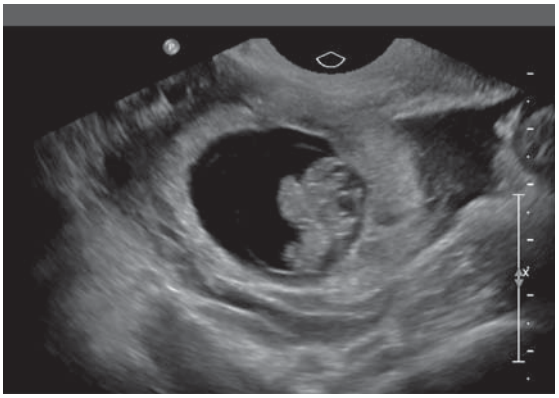

Figure 1: Twin ectopic pregnancy in fallopian tube

Management:

At laparoscopy, extensive epiploic and colonic adhesions were taken down. The mass was discovered free, lying in the pelvis with implantation along the left ovary and local peritoneal surfaces (Figure 2). No intraperitoneal hemorrhage was noted. Left salpingooophorectomy was performed as placental implantation involved the ipsilateral ovary, external fallopian tube, and the broad ligament. The patient did not experience any post-operative complications. Chromotubation did not reveal patency of the contralateral (right) tube. She was advised to undergo hysterosalpingography prior to future attempts at conceiving.

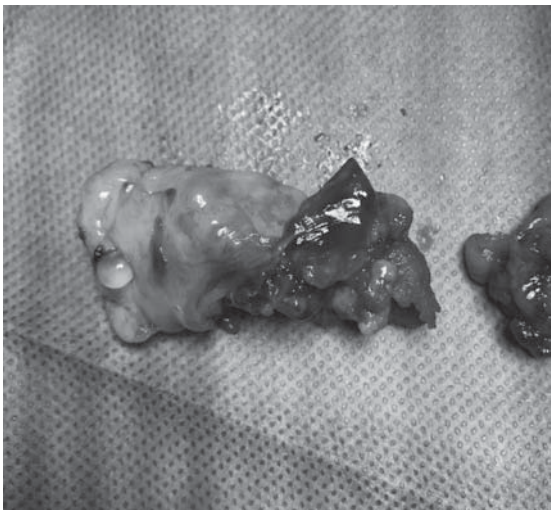

Figure 2: Ovary with chorionic villi

Discussion:

This patient's ultrasound finding of two gestational sacs containing two fetal poles with fetal heart motion in the left adnexa was consistent with a rare twin ectopic pregnancy. Even more unusual was the implantation site, primarily on the left ovary with placental attachment also on the peritoneum and fallopian tube surface. Such pregnancies, left untreated, often result in catastrophic hemorrhage.

Conclusion:

As illustrated in this case, diagnosis of abdominal pregnancy is not an easy task. There are no clear clinical symptoms, and sonography may simply suggest an extrauterine pregnancy. In most cases, the diagnosis is made during surgery. The standard practice is to terminate an abdominal pregnancy as soon as the diagnosis is made. Medical management with methotrexate is relatively contraindicated when fetal heart motion is noted, as in this case. This report describes a very rare case of twin mono-amniotic, dichorionic abdominal pregnancy, which

was successfully managed with surgical intervention and close post-operative management.

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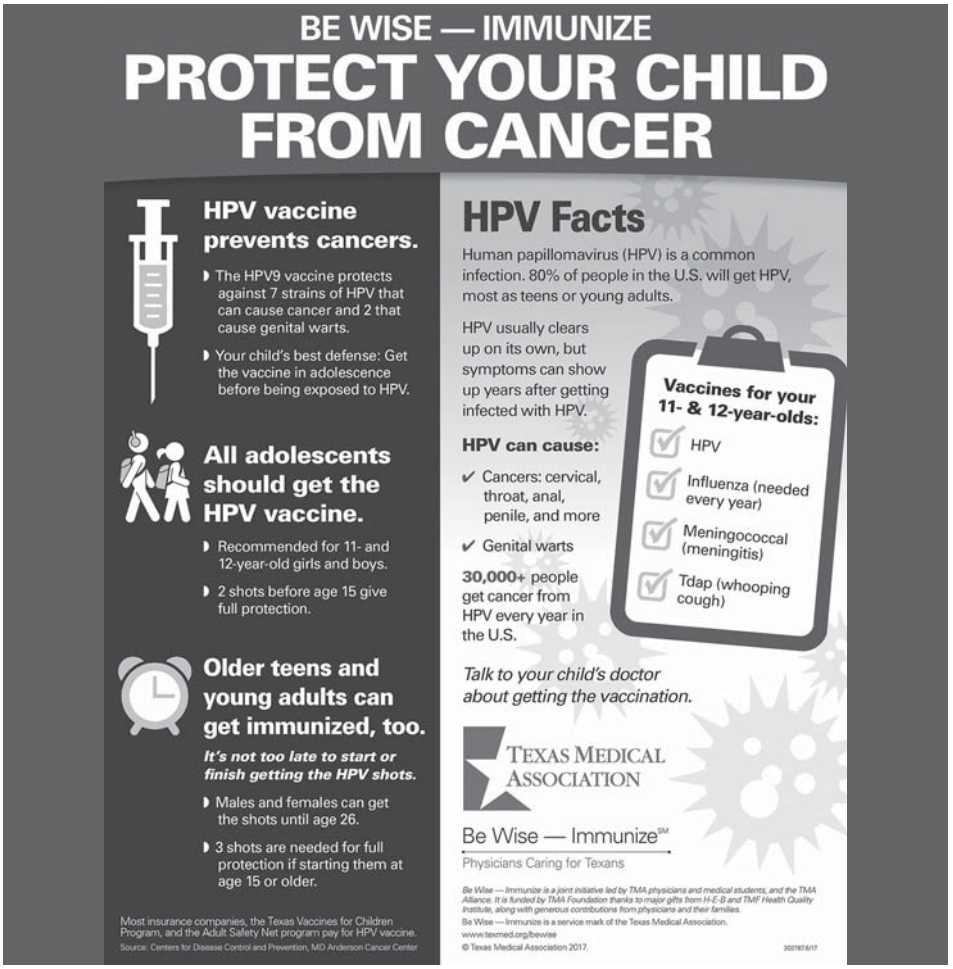

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Empathy In Care:
Delivering Bad News and Palliation of the Infant

by David A. Carlsen-Landy, MSIII; Robert B. Alexander, MSIII; Jay R. Argue, MSIII; Alyssa Byrd, MSIII; Thu Tran, PGY3; Ayobami Olanrewaju, MD; Mubariz Naqvi, MD

Abstract:

The art of delivering bad news is an unfortunate but necessary skill for physicians, as unfavorable patient outcomes are something all physicians will inevitably experience. However, while <1% of physicians report never having received formal training in breaking bad news to adults, 12% report never getting formal training in terms of pediatric patients, while 11% report similarly for adolescent patients (3). The timing of delivery, the style and tone of delivery, the information relayed to the family, and education on the strategies used in care all play a role in the family-physician relationship. The SPIKES mnemonic is commonly used to educate clinicians in how to deliver bad news, particularly in instances where palliative care is recommended. Palliative care for a newborn is defined as extensive holistic care including physical, psychosocial, and spiritual care to prevent and relieve the infant's and parent's pain and suffering. This case report is an example of a newborn who required palliative care and an opportunity for the involved health care providers to use the SPIKES protocol to deliver the news to the family.

MeSH terms:

Adult, Humans, Child, Infant, Newborn, Physicians, Family, Palliative Care, Parturition, Family Relations, Long-Term Care, Parents, Pain, SPIKES

Introduction:

Delivering bad news to parents regarding their infant has a negative impact on the parents' thoughts of their child's future. It is important to be mindful of the impact that bad news may have on the parents, such as a feeling of hopelessness that may have effects on the parents' mental and physical well-being. In being mindful, the style of delivery of the physician is particularly important to the relationship between the family and the health care team. In the case of inevitable death of an infant, the implementation of palliative care follows the delivery of bad news. The strategy of palliative care and the use of effective communication between the health care team and family leave a lasting impression on the parents regarding the care of their infant. Clinicians should strive to educate themselves in both the art of delivering bad news as well as the best approaches to palliative care in order to minimize not only the suffering of their patients, but also that of the family.

Patient Case:

The mother of the patient is a 17-year old G1P1 with Evans' Syndrome and HELLP Syndrome. The neonate was born via Cesarean Section due to pregnancy-induced hypertension and thrombocytopenia. The neonate's APGAR scores were 4 and 7 at 1 and 5 minutes, respectively. Respiratory complications in the newborn led to the use of intubation and administration of surfactant. Additionally, the newborn was diagnosed with multiple metabolic derangements including hyperglycemia, hypernatremia, hyperchloremia, hypocalcemia, hyperphosphatemia, and metabolic acidosis. Other issues addressed in the NICU included Grade IV intraventricular hemorrhage, mechanical ventilation dependent respiratory distress syndrome and pulmonary interstitial emphysema, hypotension requiring dopamine and dobutamine, renal failure, anemia of prematurity, hyperbilirubinemia, thrombocytopenia, and suspected sepsis. Due to the numerous complications and poor prognosis of the newborn, the recommendation for palliative care was brought to the parents and subsequently agreed to, allowing for the natural death of the newborn on day of life 6.

Discussion:

Unfortunately, a poor prognosis in a newborn is something all pediatricians will inevitably experience. Although fetal mortality is decreasing, it was reported to be 5.96% while perinatal mortality was at 9.98% (1). Additionally, fetal stay in NICU shows an increasing trend - one study suggesting a 23% increase since 2007 (2). The first step in addressing an unfavorable prognosis in a newborn is to be aware of an infant's life-limiting circumstances, the timing of which varies according to diagnosis soon after conception, soon after delivery, circumstances relating to a difficult delivery, and those diagnoses clarified after efforts in the NICU. The next step in care is communication of said diagnosis with the family, though few doctors report receiving any formal training in delivery of bad news regarding pediatric patients. The healthcare team should work to provide common perception of the infant's prognosis through full disclosure of the medical condition. Timing of delivering the bad news is important, as 90% of parents preferred to be told within the first week after the prognosis is known (4). The team should address basic information needs and immediate medical risks, respond to immediate discomforts, and ensure a basic plan for follow-up. It is the duty of the healthcare providers to educate the parents, anticipate what has not yet been discussed, and reassure non-abandonment.

Five aspects of physician communication are important for quality of care are: relationship building, demonstration of effort and competence, information exchange, availability, and appropriate level of child and parent involvement. Aspects of communication to be avoided include: having a disrespectful or arrogant attitude, not establishing a relationship with the family, delivering bad news in an insensitive manner, withholding information, and changing a treatment course without preparing the patient and family (5).

| *continued on page 30*

- **Settings**—Conversations should be undertaken in private and should be organized into a team-based approach, including the physician, nursing staff, and ancillary care members.
- **Perceptions**—The physician leader should understand the family's perception of the baby's medical illness.
- **Invitation**—The physician should invite the family to engage in a conversation regarding the patient's condition
- **Knowledge**—The team should relay information regarding the child's status and the details of the medical diagnosis that will have a profound impact on their family. It is important to avoid medical jargon and to speak at their level of understanding.
- **Emotions**—The physician must show compassion and must explore the emotions expressed by the parents. Empathy is the crux of breaking bad news. Parents often stress that they want their child to be regarded first and foremost as their child, and only secondarily as a child with a medical diagnosis (4).
- **Summary and strategies**—Clinicians should provide a period of silence followed by answering the questions from the family. A summary of the discussion should be given by both the physician and the family to ensure understanding. Follow-up with the physician in order to answer questions that arise after the news has sunk in as well as time to negotiate a strategy for care should also be provided.

Follow up considerations should always include support programs, referrals for specialty consultations, and therapy services. Parents may also benefit from early contact with the parent of a child with a similar condition (4). The initiation of palliative care begins with breaking bad news and continues through the management of the infant until his or her time of death.

Conclusion:

Application of palliative care principles in the NICU is an essential component of neonatal care and training. The multidisciplinary approach must have the baby, parents, and family as the focus of care and should provide care consistent with family preference and respect for their culture and faith. Bereavement support should be implemented following the end of life. Palliative care can be difficult for the family and the providers that supply it; healthcare professionals should allow for self-care to sustain their ability to provide compassionate care for their future patients and families. Clinicians are rarely taught how to deliver bad news, and published recommendations may help healthcare professionals improve this vital skill. Multiple site programs have shown that even a one-hour module on how to break bad news can offer increased sensitivity to family needs, emotional responses, and self-efficacy in delivering bad news (6). Negative outcomes are inevitable in medicine and it is important to not only manage the patient but also provide empathetic care to alleviate the emotional burden associated with neonatal mortality. With effort and training on behalf of the healthcare provider, the process of delivering bad news can become a better experience for everyone.

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Unusual Presentation of Aortic Thrombus Showering Emboli in Multiple Organs

by Muhammad Malik, MD; Sameer Prakash, DO; Asm Islam, MD; Manish Patel, MD

Introduction:

Arterial thrombosis of the aortic wall in a young patient in the absence of significant arteriosclerotic risk factors is a rare occurence. Aortic mural thrombus always presents with distant embolization. We describe an unusual case of descending thoracic aortic mural thrombus (TAMT) with showering of emboli into right kidney, spleen and left leg in the presence of thrombocytosis and JAK2 V617F mutation.

Case presentation:

47-year-old female presented to the ED complaining of upper abdominal pain for the last 6 months, worsening in intensity over the last few days. Her pain was intermittent, sharp, nonradiating and not exacerbated or relieved by any factor including meals. She also complained of new onset intermittent vascular claudication pain in her left leg. She denied personal history of hypertension, hyperlipidemia, diabetes, chest trauma, spontaneous abortion, malignancy, smoking or illicit drug use. Surgical history was significant for prior Total Abdominal Hysterectomy with bilateral Salpingo-oophorectomy. Family history was negative for any hematological malignancies.

On physical examination the patient was a middle-aged, obese woman in no discomfort. She had normal vital signs with BMI of 39. Her heart and lung findings were normal, and she had no lymphadenopathy. The abdomen was soft without tenderness. The spleen and liver were not palpable. No focal neurological findings were appreciated. No skin lesions were noted. She had normal pulses in the right lower extremity, but her left dorsalis pedis pulse was non-palpable, detectable only by bedside doppler.

Labs showed WBC 14,700/mcL with normal differential, hemoglobin 12 gm/dl and platelet count 583,000/mcL. Mean Corpuscular Volume (MCV) was 70 femtoliters, Mean Corpuscular Hemoglobin (MCH) 23.7 picograms and RBC Distribution Width (RDW) 18.4%. Serum iron level was 21 mcg/dL, calculated Total Iron Binding Capacity (TIBC) 500 mcg/dL, transferrin 335 mg/dL and ferritin 13.6 ng/mL. Erythrocyte Sedimentation Rate (ESR) was 16 mm/

| *continued on page 32*

hr and C-Reactive Protein (CRP) elevated at 40.30 mg/L. Lipase was normal. Peripheral blood smear showed moderate leukocytosis, microcytic hypochromic anemia and moderate thrombocytosis. EKG showed normal sinus rhythm. CT of the abdomen and pelvis with contrast showed filling defect in the abdominal aorta with right renal and splenic infarctions. Transthoracic echo (TTE) was normal and did not reveal any vegetations or thrombi. CT angiogram (CTA) of the chest revealed nonobstructive retrocardiac mass 1.7 x 1.8 x 7.7 cm in size without evidence of dissection or aneurysm. MRI of the chest with and without contrast confirmed the aortic mural thrombus and did not show enhancement of the lesion, making an endothelial malignancy less likely. CTA of the aorta with bilateral leg runoff showed a smooth aortic intima without evidence of ulceration or plaque formation and multiple nonobstructing emboli to her left leg. Arterial hypercoagulability workup was positive only for JAK2 V617F mutation with 10.91% activity level. Investigations for homocysteinemia, antithrombin deficiency, lupus anticoagulant, anticardiolipin antibodies and ANA panel were negative. Cardiac monitoring during her hospitalization did not reveal any arrhythmias, especially atrial fibrillation.

After discussion with the patient, hematologist, cardiothoracic surgeon and interventional radiologist, it was decided to treat the patient conservatively with antiplatelet and anticoagulant agents rather than thrombolysis or surgical or percutaneous thrombectomy. She was discharged home on 81 mg aspirin and warfarin to be taken concomitantly with therapeutic dose of enoxaparin until her INR reached between 2-3 on the oral warfarin. Repeat CTA of the chest 3 months after discharge revealed almost complete resolution of her descending TAMT. She did not have any further embolic events, and her abdominal pain had almost completely resolved by then. However, she was still iron deficient on followup despite adequate oral iron supplementation. We recommended that she follow up with a hematologist for IV iron infusion and possible bone marrow biopsy to rule out a myeloproliferative process as the cause of her anemia and thrombocytosis. However, she did not wish to be proceed with any invasive procedures and thus is being managed medically.

Discussion:

Thrombocytosis or thrombocythemia is defined as platelet count > 450,000/uL. It may be reactive/secondary or primary in etiology. Primary thrombocytosis is due to underlying myeloproliferative neoplasms such as polycythemia vera (PV), essential thrombocythemia (ET), or chronic myelogenous leukemia (CML). Reactive thrombocytosis may be due to infections, inflammatory disorders, iron deficiency, etc. It is important to determine whether thrombocytosis is primary or reactive as the treatments for the two are different. Thrombocytosis generally predisposes to small-vessel thrombosis but large-vessel thrombosis, although rare, is not unheard of. Cases of aortic mural thrombus due to both reactive and essential thrombocythemia have been reported in the past. ET leading to aortic thrombus formation is more frequently reported. 50% of patients with ET are found to have gain of function mutation i.e. JAK2 V617F mutation, but having the JAK2 mutation by itself (without the hematological abnormalities) also increases one's risk of thrombosis at unusual sites.

Thoracic aortic mural thrombus (TAMT) always presents with distant embolic events and is usually diagnosed during attempts at finding the source of embolization. Embolization to the brain, extremities, spleen, liver, kidneys and mesentery have been reported. TMAT usually forms in light of atherosclerotic, aneurysmal, traumatic, dissectional or hypercoagulable states. Idiopathic aortic thrombi have been reported as well, although workup for hypercoagulable states in these patients was NOT as complete as ours. Thrombi may form in the thoracic or abdominal aorta.

Our patient's abdominal pain was due to her splenic and renal infarcts and her left leg claudication from thrombi in her lower extremity circulation. Her TAMT was found incidentally during evaluation of her abdominal pain and was later better studied by additional imaging including CTA and MRI of the chest. During our evaluation for the cause of her unusual arterial thrombosis, the only risk factor she had for arteriosclerosis was obesity. She had not had trauma or locally invasive procedures at that site, and TTE did not show intracardiac shunting, vegetations or thrombi. EKG and inpatient cardiac monitoring did not reveal atrial fibrillation; she denied smoking cigarettes or cannabis or using illicit drugs such as cocaine. She was not on estrogen therapy and her ESR was within normal range making vasculidites and inflammatory disorders unlikely. Thrombophilia workup was positive for JAK2 V617F mutation alone and negative for hyperhomocysteinemia, anticardiolipin antibodies, lupus anticoagulants, PNH and antithrombin deficiency.

Her TAMT started spontaneously, in the background of hypercoagulability secondary to thrombocytosis and JAK2 mutation. We suspect that her thrombocytosis was likely reactive to her iron deficiency anemia, since her platelet counts were not severely elevated, she had a know etiology (iron deficiency) for her the thrombocytosis and her peripheral smear did not show large hypogranular platelets as would be seen in patients with ET. Although she tested positive for JAK2 V617F mutation, this mutation may be seen in normal population, without any underlying myeloproliferative neoplasm. It has already been established that this mutation by itself is a risk factor for thrombosis at unusual sites even in absence of hematological abnormalities. In addition, platelet counts in patients with ET are usually markedly elevated. Our patient's platelet count never reached one million during her entire course of hospitalization or on her subsequent followup. Having said that, we strongly believe that this patient would benefit greatly from bone marrow biopsy to rule out myeloproliferative processes especially given the fact that she had concomitant iron deficiency anemia that did not respond to oral iron replacement. However the patient has been noncompliant with her appointments with her hematologist on all occasions.

Most cases of TAMT described in the

literature have been managed with surgical thrombectomy with or without medical management afterwards. Our patient definitely needed medical management due to the fact that she had infarcted parts of her spleen and kidney and had widespread thrombi in her left lower extremity arterial circulation as well. If her aortic mural thrombus concealed a malignant growth, surgery would have been the definite treatment. We obtained MRI of the chest with and without contrast to help us answer this question. Lack of uptake of the contrast and smooth uniform texture of the aortic mural mass made a thrombus much more likely than malignancy. Given the overall stability of the patient and lack of clear evidence-based guidelines, the decision was made to treat the patient with medical therapy rather than with thrombolysis or thrombectomy. Combination of an antiplatelet agent and anticoagulation was chosen for her as opposed to antiplatelet agent alone. Given the size of her thrombus, what might have started out as 'platelet rich' thrombus could very well have developed 'fibrin rich' components by the time of her presentation, the treatment of former being antiplatelet and of latter being anticoagulant agents. She is to remain on this therapy long term with periodic assessment of her risk of bleeding.

In conclusion, widespread embolic events in light of negative cardiac workup should prompt one to evaluate the aorta as the cause of distal embolizations. CT scan alone is sufficient to detect an aortic mural thrombus but we recommend that, if such a lesion is found, it should be further evaluated with MRI with and without contrast to rule out aortic malignancy which may be mimicking an aortic thrombus. If MRI confirms the lesion to be a thrombus, effort should be made to identify the cause of thrombogenesis at this unusual site, with emphasis on thrombophilia workup. Treatment options for aortic mural thrombus include antiplatelets, anticoagulants, thrombolytics and percutaneous or surgical thrombectomy.

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Primary Hyperparathyroidism with Hepatic Encephalopathy: a Diagnostic Challenge

by Sameer Prakash, DO; Mohammad Islam, MD; Tarek Naguib, MD

Introduction

The diagnosis of hepatic encephalopathy should exclude other causes of metabolic encephalopathy. We present a rare case of a woman who presented with recurrent hepatic encephalopathy, persistent hypokalemia, and hypercalcemia due to adenomatous primary hyperparathyroidism (HPTH). The complex interplay of these factors is discussed.

Case Report

A 62-year-old woman with history of cirrhosis and hepatic encephalopathy, due to hepatitis C and alcohol use, was admitted with confusion and lethargy for the preceding 2 days. She had multiple episodes of hepatic encephalopathy that resolved with lactulose and rifaximin therapy, and had undergone transjugular intrahepatic portosystemic shunt (TIPS) placed for esophageal varices in the past. She reported back pain, shortness of breath, and burning urination. Previous episodes of hypokalemia and hypercalcemia revealed no etiology except for parathyroid hormone (PTH) level of 82ng/L. She had no diarrhea, acetazolamide use, or urinary diversion. Orientation was limited to self and place with evident flapping tremors and right upper abdominal tenderness. INR was 1.5, potassium 2.6 mmol/L, calcium 12.6 mg/dL, phosphorus 0.9 mg/dL, CO2 24 mmol/L, and PTH 44ng/L. CT without contrast revealed normal CNS brain, but retained stool, cirrhosis and gallstones were noted. Chest radiographs were negative. TIPS was patent on ultrasound. Urinary 24-hour calcium collection could not be collected due to disorientation. Hypokalemia improved after Zepatier (elbasvir/grazoprevir) was stopped and spironolactone was added. Ultrasound showed a hypoechoic 1cm round mass in the lower inferior thyroid pole with increased uptake on nuclear sestamibi scan, but the patient declined to complete the test. Cinacalcet was initiated and she was discharged to outpatient care in a better mental state.

Discussion

In the setting of hepatic encephalopathy, other factors contributing to a patient's confusion should be addressed. In our case, the patient's electrolyte abnormalities added to difficulty of diagnosis. First, her persistent hypokalemia was thought to be related to distal type 1 renal tubular acidosis (RTA), which can rarely be caused by primary HPTH. However, her labs showed normal bicarbonate and normal urinary pH of 8 making dis-

tal RTA unlikely. Hypokalemia itself can occur from Zepatier therapy, long-term lactulose therapy, and tubular potassium losses due to alcohol use. Relative hyperaldosteronism from failure of liver to adequately inactivate aldosterone can precipitate hypokalemia. However, this did not materialize in our patient who had appropriately suppressed renin and aldosterone levels in response to hypokalemia and volume overload. Managing hypokalemia in hepatic encephalopathy is important, as it can prolong hospital and intensive care stays [1]. Further, hypophosphatemia can be caused by primary HPTH but can also be a consequence of poor nutrition inherent to liver failure and urinary losses associated with alcoholism and respiratory alkalosis due to hyperventilation. Confusion from hypercalcemia can also be caused by volume depletion leading to elevated creatinine with added kidney injury, which can further complicate the picture in these patients who are usually placed on diuretics. Also, the use of thiazide diuretics can precipitate hypercalcemia. Lastly, hyperparathyroidism can lead to metabolic acidosis just like lactulose therapy can. The latter however, increases potassium wasting in stools. Our patient presented with hypokalemia, hypophosphatemia, and hypercalcemia. Interestingly, her bicarbonate was normal over several admissions, ruling out metabolic acidosis and possible distal RTA.

Diagnosis and management of primary HPTH in the context of cirrhosis is complex. The exact cause of encephalopathy needs to be established as hepatic encephalopathy contraindicates TIPS, which is not the case in hypercalcemic encephalopathy. Further, in cirrhosis, low albumin levels can hide hypercalcemia from the casual eye, unless corrected calcium level is calculated. The goal of therapy in these patients is to decrease calcium levels with bisphosphonates to improve mentation and then transition to the calcimimetic agent, cinacalcet, for long-term therapy. Cinacalcet rapidly normalizes serum calcium and reduces PTH in patients with primary HPTH over the long term (2). This would be effective for cirrhotic patients with Child-Pugh class B or C or MELD score > 15 who have contraindications for surgery due to high mortality risk (3). Our patient's MELD score (13) and Child-Pugh class B were consistent with intermediate risk of surgery, but the difficulty adhering to therapy due to encephalopathy was an added problem. Diagnosing the actual etiology of confusion in cirrhosis is therefore vital to avoid the risk of the proverbial "barking at the wrong tree". Annual monitoring of serum calcium and creatinine levels and of bone mineral density every 1-2 years is recommended during cinacalcet therapy (4).

Conclusion

Evaluating patients with hepatic encephalopathy can be challenging as other clinical entities contributing to the confusion must be excluded. We have discussed the complex effects of HPTH on the presentation of hepatic encephalopathy and the appropriate management for this condition. A correct early diagnosis is crucial for appropriate intervention. Primary HPTH can be treated with immediate bisphosphonates and long-term cinacalcet in lieu of surgery in advanced liver disease.

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Hypertrophic Pyloric Stenosis: An Atypical Age Presentation

by Antonio Flores, DO; Jon David, DO; Hassan Alsultan, DO; Evelyn Sbar, MD

INTRODUCTION:

Hypertrophic Pyloric Stenosis (HPS) is a condition in which there is abnormal thickening and elongation of the pyloric sphincter musculature, with resultant gastric outlet obstruction. Several factors predispose individuals to this condition, including firstborn males and family history of pyloric stenosis. The condition can lead to high morbidity and mortality if allowed to persist due to lack of caloric and nutrient intake and absorption. Surgical correction is typically curative.

CASE REPORT:

A 12-day-old Hispanic male with no past medical history presented to the ER with projectile vomiting for 6 days. The mother stated that vomiting began suddenly and persisted after every feed. She described the emesis as "reaching across the room". Mother switched from breast milk to several types of formulas, but the infant remained very hungry and wanted to be fed constantly. She initially brought the child to an ED in Dumas and was sent home based on a normal physical exam. The following day, she went to a second ED, and an ultrasound was done specifically to evaluate the pylorus. However, no sign of pyloric stenosis was observed and the patient was again sent home. The mother eventually brought the patient to a third ED a day later due to persistence of symptoms. Medications: none. Allergies: NKDA. Medical/Surgical/Social/Family Histories: Second degree relative with pyloric stenosis.

Physical Exam: BP 113/67, HR 128, RR 33, T 98°F, SpO2 100% RA. General: alert, interactive, and hungry. Lungs: CTAB with good air entry. Cardiovascular: regular rate and rhythm. GI: abdomen soft, non-distended, no organomegaly, and no masses felt. Pertinent Labs: WBC 13.1/mL, Na 147 mEq/L, UA with culture >100,000 E. coli, blood cultures negative, CSF culture no growth. Imaging: Abdominal Ultrasound showed no evidence of pyloric stenosis. Upper GI Fluoroscopy showed upper GI findings consistent with pyloric stenosis.

Hospital Course: Neonatologist was consulted and lumbar puncture was done due to persistent symptoms and elevated white count. The patient was started on gentamicin and ampicillin for urinary tract infection. The patient continued to have vomiting with feeds in the hospital despite treatment for UTI. A repeat ultrasound for pyloric stenosis was performed as well as a modified swallow evaluation with contrast. The ultrasound was again negative for pyloric stenosis. However, the modified swallow evaluation showed obvious and significant pyloric stenosis. A pediatric surgeon was consulted, and the patient was transferred to specialty care for surgical repair of his pyloric stenosis. The surgical correction was performed without complication, and the patient was discharged after normal feeding with resolution of symptoms.

DISCUSSION:

Hypertrophic pyloric stenosis is the most common condition requiring surgery during early infancy. It has a prevalence of approximately 2 per 1000 live births. Presentation is usually between 2-8 weeks of age. An incidence occurring before 2 weeks or beyond 12 weeks is extremely rare but has been reported. The exact cause of HPS is unknown, but may be related to a combination of environmental and genetic factors. One theory is that of prolonged pylorospasm with work hypertrophy, with spasm being initiated by miscues from the central nervous system. Known risk factors for HPS include primiparity, male gender, birth between 28 to 36 weeks' gestational age, and family history of pyloric stenosis. 5 genetic loci have been identified that are associated with HPS.

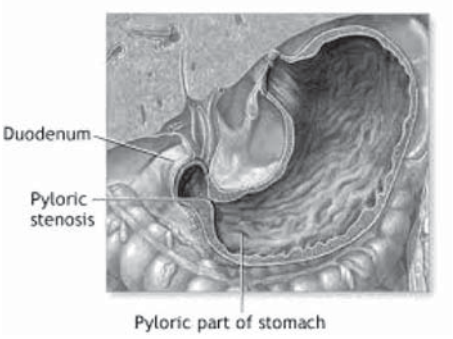

Figure 1.
A view of the stomach showing hypertrophy of the pyloric sphincter, the classic finding in pyloric stenosis

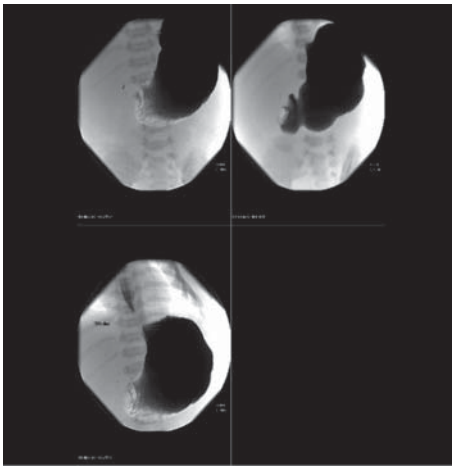

Figure 2. Fluoroscopy Upper GI Series with air contrast showing moderate to severe pyloric stenosis

Vomiting is a cardinal symptom in hypertrophic pyloric stenosis. The vomiting is non-bilious and may initially be mild but gradually becomes more forceful and then almost always projectile in character. A distinct feature is that the infant is eager to continue feeding, and will immediately feed soon after vomiting. There is commonly a loss of weight or failure to gain weight secondary to the continuous vomiting. Later in the course of disease, hypochloremic alkalosis may develop, as shown by increased carbon dioxide and decreased chloride in the blood. Other abnormalities observed are hypokalemia, decrease in ionized calcium in the blood, decrease in plasma proteins, and decrease in hemoglobin concentration.

Ultrasound is the gold standard in diagnosis of HPS. Diagnostic criteria for HPS include muscular wall thickness greater than or equal to 3 mm, pyloric length greater than or equal to 15 mm, and failure of gastric contents to pass through the pyloric channel during real-time imaging. Upper GI fluoroscopy is also used in diagnosis of HPS and includes the "string sign," representing the narrowed pyloric channel. Also seen is an abnormal impression from the enlarged pylorus upon the contrast column of the antrum or duodenum, referred to as the "shoulder" and "mushroom" signs, respectively, and hyperperistalsis of the stomach with no egress of contrast. Surgical correction via pyloromyotomy provides rapid recovery time compared to non-surgical methods, with an average hospitalization of 5 days, and boasts a mortality rate that is almost negligible.

CONCLUSION:

Hypertrophic pyloric stenosis is a common condition in infants who present with non-bilious vomiting. The cause for this condition remains obscure; however, there are several risk factors that may increase the likelihood of an infant developing HPS. Several clinical presentations strongly suggest HPS, and specific findings on imaging through ultrasound or swallow study further confirm this diagnosis. Stabilization of the patient precedes curative correction via surgical repair. Although it is very rare for HPS to occur before 2 weeks of age, as in this patient, it has been known to occur this early and should always be considered if the patient is presenting with classic symptoms of HPS.

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Lateral Medullary Syndrome and Focal Segmental Glomerulosclerosis

by Sameer Prakash, DO; Mohammad Islam, MD; Tarek Naguib, MD

Introduction

Lateral medullary syndrome, also known as Wallenberg syndrome, is a clinical syndrome caused by acute ischemic infarction from blockage of blood vessels supplying the lateral region of the medulla oblongata (1). Common symptoms include dysphagia (difficulty swallowing), dysarthria (slurred speech), and dysphonia (altered voice quality). It is commonly caused by atherosclerosis, embolism, or dissection. We present the case of a 46-year old African-American male who presented with dysphagia and sensory abnormalities as well as bilateral lower leg swelling and was found to have a small subacute infarct in lateral medullary region. This was thought to be related to hypercoagulability induced by focal segmental glomerulosclerosis (FSGS) that was diagnosed on kidney biopsy.

Case Report

A 46-year-old man with uncontrolled hypertension presented with bilateral progressive lower extremity painful swelling for 2 weeks. Problems swallowing liquids and solids began 2 weeks earlier along with altered temperature sensation in the arm. Besides a long history of tobacco and marijuana use, he was healthy. He had BP of 224/132mmHg, moderate leg edema with faint pulses and abnormal temperature response in right arm. Besides BUN 11 mg/dL, creatinine 0.8 mg/dL, albumin 1.4 g/dL, total protein 4.3 g/dL, all lab was normal including BNP and troponin. Imaging revealed bilateral superficial femoral artery occlusion with occlusion of anterior tibial artery with distal reconstitution, but no venous thrombosis. Ejection fraction was 60% with left ventricular hypertrophy. MRI of brain showed left lateral medullary changes and T2 signal hyperintensity bilaterally in thalami and in right upper pons. 24-hour urine protein of 3.2 grams was due to FSGS as demonstrated on kidney biopsy showing perihilar variant with moderate interstitial fibrosis and mild arteriosclerosis.

Discussion

Lateral medullary syndrome is not a common condition. This is the second case in the literature of a very similar presentation of a 45-year-old man presenting with Wallenberg syndrome caused by thrombosis of posterior inferior cerebellar artery due nephrotic syndrome. However, the previous case was due to idiopathic membranous glomerulonephritis confirmed on kidney biopsy, while our case is due to FSGS (1). The usual presentation is a unilateral one. However, our patient who presented with unilateral symptoms actually had bilateral changes on MRI, suggesting a systemic etiology. Nephrotic proteinuria has historically been associated with hypercoagulability and vascular occlusions such as DVT and renal vein thrombosis (1). However, the usual culprit for causing nephrotic proteinuria-associated venous thromboembolism is membranous glomerulonephritis (MGN) more than FSGS (2). The mechanism for hypercoagulability in the cases of nephrotic proteinuria is thought to be related to urinary losses of coagulation factors, a mechanism that is common to all persons with nephrotic proteinuria.

Although lateral medullary syndrome has not been reported previously with FSGS, the latter condition has actually been reported in association with thromboembolic phenomena, albeit less commonly than in the case of MGN (2). It is likely that uncontrolled hypertension on presentation accentuated the neurological damage at the cerebello-pontinomedullary junction and precipitated this unusual presentation in this gentleman. The mechanism that we propose is more like an ischemic reperfusion injury (IRI) that takes place after the correction of hypotension-related ischemia where the restoration of blood flow into friable ischemic tissue compounds the damage. However, in our case, the initial ischemia was likely produced by microthrombi due to hypercoagulability of nephrotic proteinuria that was compounded with restoration of flow due to the severe HTN. There was no acute thrombosis noted in the lower extremity circulation whether venous or arterial. We hypothesize the arterial insufficiency to be related to the long term history of smoking and hypertension, a mechanism that may have also affected the vascular integrity of the posterior cerebral circulation.

In conclusion, this case of lateral medullary syndrome with bilateral brain stem ischemia in the setting of nephrotic proteinuria is rare and likely related to the underlying nephrotic syndrome. Appropriate treatment of FSGS may well mitigate the extension of both central and peripheral ischemic complications of the disease. It is important to evaluate urinalysis in persons with edema with or without high BP. If proteinuria is noted, aggressive diagnosis and management should be pursued not only to protect kidney function but also to prevent target organs from sustaining vascular damage.

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by Tarek Naguib, MD, M.B.A., F.A.C.P.

Balanced Diet No Good New York Times (8/9) – An American Heart Association panel released a report to suggest that people whose diets contained the greatest variety of foods tended to eat many nutritious foods but also many junk foods like sugary snacks and beverages and processed foods.

Intermittent Fasting for Diabetes Type 2 ACP Diabetes Monthly (8/10) – A study evaluated intermittent energy restriction diet of 500 – 600 Kcal/day on 2 consecutive days each week with usual diet on the other 5 days yields better hemoglobin A1C and diabetes control over 12 months as compared with those who used continuous restriction of calories at 1200 – 1500 Kcal/day. Those on the intermittent diet have also shown to have reduced weight.

Children Can Eat More Vegetables New York Times (8/9) – Researches have studied over 230 preschoolers and learned that they eat more vegetables when their meal is served in plates that are decorated with vegetable pictures.

Cyclospora Outbreak Continues in Texas Texas Med (8/8) - Health officials in Texas are searching for the cause of cyclospora outbreaks in 45 Texas counties this year. The infection spreads via fresh vegetables and salads and causes diarrhea and bloating. More than 10 states are included in the outbreaks per the CDC.

Red Meat Allergy Associated With Heart Disease JAMA (7/31) – Scientists discovered that persons with red meat allergy as defined by having antibodies in their blood (against alpha galactose found in meat) have 30% more plaque buildup in their coronaries, especially in those who are younger than 66 years of age.

Red Meat Allergy in the US JAMA (7/31) – Red meat allergy is defined by having antibodies to alpha galactose in the blood. Only 1% of the population might have red meat allergies but as many as 20% of them do not have symptoms despite having the antibody in the blood. Meat allergy is most prevalent in the Southwest and Eastern US where the lone star tick is prevalent. The lone star tick can sensitize people to the red meat allergen.

New Medicare Cards Tips Texas Med (8/8) – Regarding Medicare Beneficiary Identifier (MBI):

1. Disregard QR codes (a machine-readable square code) on the front or back. The code allows the contractor who prints the cards to make sure the right card goes to the right person. You can't use the codes for any other purpose.

2. Note that IDs can change. Unlike the old Social Security number-based health insurance claim number (HICN), a patient's MBI is randomly generated and could change per patient request or if CMS decides the number is compromised.

3. Don't use the hyphens. Just like with the old health insurance claim number (HICN), MBI hyphens on the new card are for illustration purposes. Don't include the hyphens or spaces on transactions.

Phone App Fails to Control Hypertension JAMA (6/26) – A study comparing blood pressure control in persons who used a smartphone app to remind them of taking medications (versus those who did not) revealed slight improvement in taking medications but no benefit in blood pressure control.

Teens Shift to Electronic Cigarettes JAMA (7/24) – While overall tobacco product use has declined among teens, electronic cigarette use has increased substantially, according to CDC.

Cash Most Effective for Smoking Cessation JAMA (7/24) – The most effective modality to produce successful smoking cessation in a study of over 6000 participants was the option that offered $600 in redeemable funds for sustained abstinence (2.9% quit rate overall, 12.7% among motivated participants).

Death from Falls Increases in the US JAMA (6/26) – The death from falls has been increasing on annual basis since 2007 by 3% every year; the total is 31% in 2016 as compared to 2007. Among the causes is the greater survival from chronic illnesses and the aging of the population. Alabama has the lowest death rate from falls 24.4 per 100,000 population and Wisconsin has the highest 142.7 per 100,000. The cause of variation is unclear. It is also unclear whether freezing climate has to do with fall variation.

First West Nile Virus Death Dallas Morning News (8/7) – Dallas County Health and Human Services announced a death in the zip code 75229 in northwest Dallas, Texas. This first death this year is due to neuroinvasive disease. Three cases have been reported so far this year from the mosquito-borne illness. The last year, two of the 26 residents infected in Dallas died.

Atrial Fibrillation (A Fib)

by Tarek Naguib, MD, M.B.A., F.A.C.P.

What is A Fib?

Atrial fibrillation (A Fib) is a type of abnormal heart rhythm in which the top part of the heart (the atrium) generates a completely disorganized rhythm (described by doctors as irregularly irregular). A rhythm described as regularly irregular does not apply to A Fib and usually reveals an abnormal beat at fixed intervals.

Why is A Fib important?

The condition is common in persons above 65 and causes palpitations. This is uncomfortable feeling that can be severe if the heart rate picks up well above 120 beats per min to ranges as high as 160 -180 beats per min. In these high rates, low blood pressure can develop from difficulty filling the heart with blood due to the very rapid rate. Due to the fibrillation of the atria (right and left atrium chambers), the blood stagnates and can develop clots. These clots in the atria can travel to the brain when the atria restore efficient contractions. These travelling clots can cause stroke.

Where did the Name A Fib Come from?

The name of fibrillation describes the small fibers (fibrils) contracting each on its own.

How do I Suspect A Fib?

Suspect the A Fib when you feel fluttering in your chest or feel dizzy with pulse being fast and irregular.

How to Diagnose A Fib?

A Fib is diagnosed with EKG which is the electrical tracing of the heart. It is a cheap and simple test that takes only a few minutes to be done. However, if A Fib comes and goes, it will not be always found on the EKG. In this case we call it paroxysmal A Fib.

How Does A Fib Develop?

A Fib can develop spontaneously with no reason but also it can herald an underlying disease like thyroid abnormality or underlying coronary heart disease.

How do Doctors Treat A Fib?

A Fib can be controlled with medications to slow down the irregular heart rate and sometimes medications can convert the rhythm to normal one. If medications fail, a brief electric shock under anesthesia can convert the rhythm to normal. Of course, underlying cause, if found, need be treated. Specialists in electrophysiology can ablate the focus of A Fib in the heart through the use of a heart catheter that employs radiofrequency waves.

How Can I Help Prevent A Fib?

Early diagnosis is the key issue. If underlying causes are present, appropriate treatment can mitigate the development of A Fib. Follow up with your physician for other medical problems is very beneficial in this respect. The US Preventive Services Task Force finds the data to support routine EKG in persons older than 65 years of age inadequate to achieve early diagnosis for A Fib.

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The endowment fund was established in 1981 to promote the advancement of general education in medical science in Potter and Randall counties through discussion groups, forums, panel lectures, and similar programs. It is the hope of the society that, through the endowment fund, the work of our physicians will be continued by increased public awareness and understanding of the advances in medical science.

We are happy to accept memorials and/or honorariums. Notification of gift is sent immediately. Amount remains confidential. Your contribution is tax deductible. Please make checks payable to Potter-Randall County Medical Society, and send to PRCMS, 1721 Hagy, Amarillo, Texas 79106.

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Dr. Constantine Saadeh Introduces

DR. NICOLE DAVEY

Board-Certified Rheumatologist

We are so pleased to have Dr. Nicole Davey-Ranasinghe (AΩA, University of Nevada School of Medicine) aboard Allergy A.R.T.S.

Dr. Davey did her internal medicine residency at the University of Nevada School of Medicine where she served as chief resident. Following residency, Dr. Davey completed her clinical training with a **fellowship in rheumatology** at Oregon Health and Science University. She has spent the last three years with Centura Health Physician Group in Durango, Colorado.

Board Certified in rheumatology and internal medicine, she brings experience and passion for the management of both common and complex rheumatologic conditions, such as **rheumatoid arthritis, lupus, osteoarthritis, spondyloarthritis and osteoporosis**.

I know Dr. Davey will be a great asset to the patients of Allergy A.R.T.S. and to the Amarillo medical community. **Welcome!**

To make an appointment with Dr. Davey, please call (806) 353-7000

Constantine Saadeh, M.D.
FACP, FACR

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