PANHANDLE HEALTH

A QUARTERLY PUBLICATION OF THE POTTER-RANDALL COUNTY MEDICAL SOCIETY

Winter 2016 | VOL 27 | NO. 1

Case Studies from Texas Tech

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CONTENTS

Case Studies from Texas Tech

On The Cover: *"Stellar's Jay"*, by L. Edwin Dodson, M.D.

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President's Message:
The Long Good-bye

by L. Edwin Dodson, M.D.

No, this is not an admission of early Alzheimer's Disease or other dire condition, but a good bye to the active practice of medicine. I believe I am the only President of the Potter-Randall County Medical society to end his or her term of office in the same month that he retires. This month therefore has dual significance for me.

It is difficult to leave a practice behind. The Texas Medical Association has a comprehensive list of steps to be taken leading up to retirement, including timetables for notifying patients, Medical organizations, governmental agencies, and insurers. In addition, my group has a 1 year notification requirement stretching out the process even further. As the time grows closer there are all the many tearful good-byes with patients, some of whom have been in my practice for 30 years or more. There are many experiences which lead one to consider the taphonomy of his practice, the conversion of your life's work to a fossilized collection of records.

To offset this gloomy thought there are many good memories: the thrill of starting medical school, the feel of a new textbook in your hand, the exhilaration of making a diagnosis, of knowing why someone feels that way, and understanding what is coming, and how to prevent or soften it. Presenting your research at a national meeting and teaching younger medical personnel the intricacies and hidden pearls of The Craft are things you will never grow tired of recalling.

The stories patients tell you are remembered forever: the father comforting his dying daughter by recounting the story of the deer they saw in the woods, the mother's tale of facing the challenge of caring for a Type 1 Diabetic child, the mature patient facing the loss of a limb, the spouse adrift after the loss of a lifelong partner.

These are the things that make me realize I have been granted the privilege of standing at a post of honor, and that character is as important as reputation. I have tried to do these things and hope I have been worthy.

I would like to give a special thanks to the members of the Potter-Randall County Medical Society for conferring upon me the honor of being your president, and to the members of the Board of Directors of the medical society for their support. You made me feel like this year was a Victory Lap for my career. It has been a privilege to know you all and to practice in the Amarillo Medical Community.

Alliance News

by Irene Jones, Co-President

SHOUTOUTS!

Thank you **Dr. & Mrs. Shane Holloway** for opening their beautiful home to all of us for our annual fall social. It was a lovely evening.

Thank you **Kasey Daniel & Erika North** for stocking the Hygiene Closet in October and November. The hygiene closet is located in the ACTS Community building in the San Jacinto neighborhood. Visit www.actscommunity.org for more information.

Thank you **Jesa Hernandez-Wang, Elisia Miller, Lacie Schniederjan, Kristen Atkins** for providing meals this fall to the families living at the Ronald McDonald house.

Thank you **Lara Assadourian** and her son for volunteering at Snack Pak in October. Thank you to **TOP NOTCH** for hosting our ladies' night out on November 15th.

Our last event of the year is our New Year's Eve Celebration. We hope you will make plans to attend. Visit our website www.potterrandallalliance.com for more information on table and ticket sales.

Have a wonderful Holiday Season and Happy New Year!

Irene Jones-President

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Executive Director's Message

by Cindy Barnard, Executive Director

The articles in our Winter issue of *Panhandle Health* are case studies by physicians and residents at Texas Tech. A case study is an "in-depth study of one individual". Ideally, a case study details a particular medical case and describes the background of the patient and discusses investigations undertaken in order to determine a diagnose/diagnoses. A case study also might indicate a previous course of treatment the patient underwent. In general, case studies are informative and a useful part of every physician's medical education, both during training and on a continuing basis. "By reviewing case studies, physicians may gain a broader understanding of clinical diagnoses, treatments and outcomes."

As the year ends, I want to thank the 2016 Board of Directors for their service and dedication to our Society. Under the leadership of our President, Dr. Ed Dodson, 2016 has been an exceptional year. The following physicians deserve a big thank you for their support as well:

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Another thank you goes to the 2016 *Panhandle Health* Editorial Board, led by Dr. Ellen Hampsten, Editor and Dr. Traci Crnik, Associate Editor. Other members are Walter Bridges, M.D., Tarek Naguib, M.D., Steve Urban, M.D., Paul Tullar, M.D., and Soleil Arrieta, M.D.

A final thank you goes to our 2016 "Circle of Friends" for their continued financial support and generosity . Their commitment is absolutely essential to the success of all our events. They are Amarillo National Bank, Baptist Community Services, Duncan & Boyd Jewelers, Neely, Craig & Walton Insurance Agency, Texas Medical Association Insurance Trust, Texas Medical Liability Trust, Interim Healthcare, Happy State Bank, Panhandle Eye Group, L.L.P, Support Hose Plus, Cenveo, Craig Senior Living, Pat Davis Properties, The Cottages at Quail Creek, Daryl Curtis, CLU, CHFC, and Physicians Financial Partners.

Our cover for this issue is by our former President, Dr. Ed Dodson.

L. Edwin Dodson, M.D., FACP has been an enthusiastic amateur photographer since childhood using various Kodak cameras. The gift of an SLR camera while in college was a great step up. He particularly enjoys setting up difficult shots and exposure problems. The advent of digital imaging has led to his enjoyment of photo editing. The Cover photo showing a Steller's Jay against a background of aspen leaves was taken at a friend's home in Northern New Mexico in September, 2016.

Editor's Message

by Ellen Hampsten, M.D.

This issue of *Panhandle Health* is very special to me. It showcases pieces from our very own resident physicians here at Texas Tech University Health Sciences Center. They discuss interesting cases, opinion pieces and novel research.

I would like to dedicate this issue of *Panhandle Health* to one of our region's most well-loved physicians, Dr. Daniel Jenkins, who passed away in September. I, like many other doctors in the Texas Panhandle, have been enriched by the teaching and example of Dr. Jenkins.

Dr. Jenkins called Amarillo home even before he practiced medicine here. He attended Amarillo College before transferring to The University of Texas at Austin. From there, he attended The University of Oklahoma School of Medicine and graduated with his M.D. in 1982. He joined the first class of TTUHSC Amarillo Internal Medicine residents. While in residency, he met and married his wife, Dena.

After graduating from residency, Dr. Jenkins worked as faculty at TTUHSC in the Internal Medicine department. While he was a resident, Dr. Jenkins met Dr. Randy Stewart, a medical student at TTUHSC in Amarillo for his clinical rotations. The two became fast friends and, when Dr. Stewart graduated residency, they formed a partnership in private practice. This private practice transitioned into care at the Veteran's Affairs Hospital, faculty roles in both internal medicine and family medicine at TTUHSC and eventually, to the creation of St. Anthony's Hospice, the first inpatient hospice in the region.

St. Anthony's Hospice started in August of 1990 with 4 inpatient beds and 10-20 patients at home. It began as a dream of Sister Olivia Prendergast of the Sisters of the Incarnate Word. As the hospice philosophy and reputation began to take hold, Dr. Jenkins and other physicians realized the importance of end-of-life care. In 2002, they took Sister Olivia's dream to Belarus, to an area devastated by the Chernobyl nuclear disaster. There, they helped local doctors establish hospice care in the region. They realized that the devastating events that occurred 16 years previously took their toll on the population. Hospice care gave those doctors another option for taking care of patients at the end of life.

Dr. Jenkins not only extended his service to the people of Belarus, but to other nations as well. He traveled to Mexico, Honduras, Kenya and, 2 months before he passed away, he served in the Dominican Republic. I had the privilege of working with him on this final trip.

To say that Dr. Jenkins's legacy is vast would be an understatement. Our community remembers him for his integrity in medicine and his leadership. But, to those of us fortunate enough to have been his students, we remember him for the example he showed. He taught me how to read EKG's, but he also taught me to be a humble servant to my patients. He showed his students and residents how to, as Dr. Stewart puts it, "be compulsive about taking care of patients." He would say, "Treat them like family. If you don't know what is going on, start over until you figure it out." He exemplified how to treat others as you would want to be treated. All this he did while humbly standing in the background and never seeking glory.

Earlier this year, Dr. Jenkins and Dr. Stewart began a new venture. They started a new hospice organization in the East Texas town of Paris. As part of his memory, a foundation has been established in Dr. Jenkins' name. The Dr. Daniel Jenkins Foundation was established to help hospice patients and their families in both Amarillo and Paris. Though the website is not operational yet, donations will be accepted.

Please, enjoy this issue created by our young colleagues.

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.

A Fatal Traid: Eisenmenger Syndrome, Pregnancy, and Severe Preeclampsia

by Luke Wendt, D.O.; Asha Kovelamudi, MS-III; Zoya Moghal, MS-III; Ashley Shelley, D.O.; Paul Tullar, M.D.

INTRODUCTION

Eisenmenger syndrome (ES), named after Victor Eisenmenger who first identified the syndrome in 1897, was described in 1958 by Dr. Paul Wood as elevated pulmonary arterial pressure and pulmonary vascular resistance, resulting in a reversed or bidirectional shunt at any site between the two circulation systems [1]. The shunting is most commonly a result of congenital heart defects (CHD). Ventricular Septal Defect (VSD) is the most common CHD and also the most lethal cause of ES CHD, with a mortality rate as high as 66%.

CASE

A 23-year-old primigravida with no prenatal care presented to the emergency room with worsening shortness of breath over the last three days. Her initial vitals were: Temp 98.2 °F, HR 122 bpm, BP 174/89 mmHg, RR 48 rpm, and O_2Sat 60%. The patient quickly became unstable and with O_2 saturation worsening, the patient was intubated and placed on BiPAP ventilation. Labs drawn showed Hgb/Hct 14.7/44, Plt 17,000, normal AST/ALT, Fibrinogen 536, and normal PT/PTT/INR.

Evaluation of the fetus revealed a category III fetal heart tracing with a fetal heart rate of 150 bpm, absent variability, and recurrent variable decelerations. Fundal height was consistent with a 30-34 week fetus. Due to worsening blood pressure, heart rate, and oxygen saturation, a stat primary low transverse cesarean section was performed and resulted in a liveborn male, APGAR 2/7, weight 2120g, and Ballard scores corresponded to a 35-week gestation. Estimated blood loss was 800 mL.

Postoperatively the patient was stable with O_2 sat 80-90% but remained intubated and was sent to surgical ICU. Magnesium sulfate was started for seizure prophylaxis as the patient had preeclampsia with severe features. Lower extremity venous dopplers were negative. A chest x-ray showed left upper lobe infiltrates and edema, suggestive of pneumonia, and she was started on broad-spectrum antibiotics. The patient experienced intermittent periods of hypoxia despite BiPAP that resolved with positioning which prompted an echocardiogram and bubble study. This showed a LVEF of 40 to 45% and a right-to-left shunt, suggestive of a large secundum ASD.

On post op day 1, difficulties ventilating the patient persisted and repeat chest x-ray showed worsening bilateral infiltrates and pulmonary vascular congestion despite antibiotic treatment for pneumonia. Thrombocytopenia persisted, and she received a total of 4 units of platelets. A transesophageal echocardiogram showed a LVEF of 70 to 75%, 5mm muscular VSD, 5mm patent foramen ovale, and loculated pericardial effusion near the left ventricular apex. Patient was diagnosed with Eisenmenger syndrome with acute respiratory failure.

On post op day 3, after inability to adequately ventilate and multiple codes, the family asked to withdraw support and the patient died from acute hypoxic respiratory failure.

DISCUSSION

With improved access to pediatric cardiology and cardiac surgery, congenital heart defects are diagnosed earlier and are better managed at a younger age. Improved outcomes translate to an increasing number of individuals reaching their reproductive years. In the CONCOR registry out of the Netherlands they estimated the prevalence of pulmonary arterial hypertension to be 4.2% and only 1% for Eisenmenger's Syndrome[2].

Pregnancy is contraindicated in women with CHD as the risk of developing pulmonary artery hypertension and a right to left shunt increase due to the hemodynamic changes associated with pregnancy. Mortality is estimated to be as high as 60%. VSD is the most common CHD with atrial septal defect and patent foramen ovale less common. Preeclampsia is a rare confounding variable with only five cases reported in current literature. Of those five, only one survived (in a patient with patent ductus arteriosus). There are no cases reported

in current literature of maternal survival with Eisenmenger's syndrome, severe preeclampsia, and a VSD.

Current recommendation regarding CHD and fertility includes long-acting reversible contraception or permanent sterilization. If pregnancy does occur, close management between cardiology and OB/GYN must occur, with recommendation for inpatient management beginning at 20 weeks gestation[3].

This case is unique in that it represents the frightening possibility of CHD that was never diagnosed in a now pregnant female. With no prior medical history and no prenatal care, we were unable to offer medical abortion at an earlier gestation age, let alone to counsel against pregnancy.

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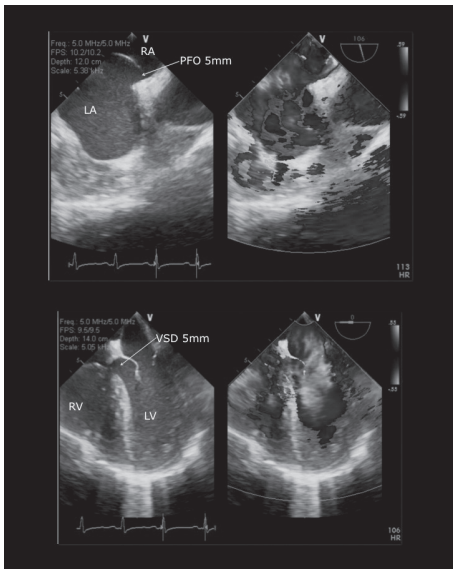

Happy Holidays

from the Potter-Randall County Medical Society Resident Members

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Anonymous Survey Among Physicians Caring for Intravenous Drug Users Requiring Long Term Antibiotics

by Olga Vasylyeva, M.D. – Rochester General Hospital, Rochester, NY

To the Editor:

Outpatient parenteral antimicrobial therapy (OPAT) is considered a standard modality for the patients who can be discharged from the hospital while still require intravenous (IV) antibiotics (1,3). However, patients who are likely to abuse IV access, such as intravenous drug users (IVDU), are considered poor candidates for OPAT (1,3), a matter that deprives these patients and the health care system the benefits of OPAT.

A few solutions have been suggested in the literature to optimize care for IVDU (1,3,4,5). However, their efficacy and safety remains unknown. Physicians make the decision on eligibility for OPAT, and must take responsibility for safe discharge (4). It is important to understand the physicians' decision making process and address their concerns and challenges while caring for IVDU in order to continuously improve patient care.

Methods:

An anonymous voluntary on-line survey of physicians and physicians-in-training was conducted at Rochester General Hospital, Rochester, New York, from 12/29/2015 - 2/1/2016.

Results:

A total of 55 physicians responded to the voluntary survey.

Forty-two (76%) responders reported that they would not discharge an IVDU with a permanent IV catheter in place. Among these respondents, 21 (50%) would re-consider their decision if the patient has strong family support, close outpatient follow up, a negative drug screen, or began a drug rehabilitation program during hospitalization.

Thirteen (24%) respondents reported that they would discharge IVDU with long term IV access. When asked about their rationale, the majority (11 or 85%) were of the opinion that it is not appropriate to make a decision based only on the assumption that the patient will abuse the IV line.

Overall, among 55 responders, the majority (33 or 60%) favored an alternative oral or intramuscular regimen as one of the best options for management of IVDU requiring prolonged antibiotics.

Thirteen respondents took the opportunity to share their thoughts on the matter. Some pointed out that there is not enough data on OPAT among IVDU or on shorter duration of IV therapy in this population. Some shared their challenges in management of IVDU such as visitors who might encourage drug use and patients' drug seeking behavior. Suggestions included involvement of substance abuse and infectious diseases specialists, more active role of home care, education of the IVDU on permanent IV line management to avoid contamination, and penicillin allergy testing and desensitization if penicillin allergy is the reason not to use an oral alternative.

Conclusion:

Among our sample of 55 physicians, the majority was reluctant to discharge IVDU on long term outpatient antimicrobial therapy for fear of access abuse on the part of the patient that would potentially further complicate their illness.

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Fournier's Gangrene

by Luke Wendt, D.O.

Introduction

In 1883, French venereologist Jean Alfred Fournier published a case series that described a fulminant form of necrotizing fasciitis that was polymicrobial and involved the perineal, perianal, and genital areas in otherwise healthy males. It was eventually named after him, Fournier's gangrene (FG). Today we understand that the infection described by Fournier isn't limited to males and can affect both males and females. Common risk factors for this uncommon form of necrotizing fasciitis include impaired immunity, diabetes, alcoholism, and urogenital trauma.

Case Report

A 43 year old Gravida 3 Para 3 female presented with increased pain and drainage from a right labial abscess. The patient originally self-lanced a 1cm x 1cm abscess on her right labia. Two days later she presented to her community hospital and was given TMP/SMX 160mg/800mg BID & Doxycycline 100mg BID for the right labial abscess. Also during the same visit she had a random glucose of >500 and was diagnosed with Type II Diabetes Mellitus; she was started on metformin 500mg BID. Five days later the patient represented to her community hospital with subjective fevers and severe groin pain with movement. She was examined and subsequently transferred to Northwest Texas Hospital (NWTH) for higher acuity care.

Upon arrival to NWTH the patient had a temperature 36.7 ºC, heart rate of 106, blood pressure of 112/61, respirations of 18 and a BMI of 39. Pertinent medical history included newly diagnosed Type II DM and a 25 year history of tobacco use, 1pk/day. Upon examination the patient appeared ill, had a foul-smelling labial discharge with necrosis of the right labia tracking to the buttocks, and diffuse erythema extending from the anogenital region superiorly to the umbilicus. Chemistry labs were within normal range except for a potassium of 2.8 and an elevated glucose of 154. Hematologically, the patient had a slight elevation in her white blood cell count to 11,500 and mild thrombocytopenia of 118,000. Computed Tomography of the abdomen and pelvis with IV contrast demonstrated extensive air and soft tissue stranding in the abdominal subcutaneous tissue, right labia, perirectum and pre-sacrum.

General surgery was consulted and made the diagnosis of Fournier's gangrene. As this is a surgical emergency, infectious disease was consulted and

PANHANDLE HEALTH

A Publication of the Potter-Randall County Medical Society

Editorial Policy and Information for Authors

Purpose *Panhandle Health* strives to promote the health and welfare of the residents of Amarillo and the Texas Panhandle through the publication of practical informative papers on topics of general interest to most physicians while maintaining editorial integrity and newsworthiness.

Spectrum *The Journal* seeks a wide range of review articles and original observations addressing clinical and non-clinical, social and public health, aspects as they relate to the advancement of the state of health in the Texas Panhandle. Pertinent letters to the editor, news submissions, and obituaries listings are accepted pending editorial review. The Editorial Board accepts or rejects submissions based on merit, appropriateness, and space availability.

Submission process Material should be e-mailed to the editor at prcms@suddenlinkmail.com or mail a hard copy to Cindy Barnard, PRCMS, 1721 Hagy, Amarillo, TX 79106. A recent photograph of the author (optional) and a curriculum vitae or a biographical summary are also to be submitted.

Conflict of Interest Authors must disclose any conflict of interest that may exist in relation to their submissions.

Journal Articles Manuscripts should be double-spaced with ample margins. Text should be narrative with complete sentences and logical subheadings. The word count accepted is generally 1200 to 1500 words. Review articles and original contributions should be accompanied by an abstract of no more than 150 words.

References References to scientific publications should be listed in numerical order at the end of the article with reference numbers placed in parentheses at appropriate points in text. The minimum acceptable data include:

Journals: Authors, article title, journal, year volume, issue number, inclusive pages.

Books: Author, title, place of publication, publisher, year.

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recommended starting the patient on vancomycin 1g IV, meropenem 1g IV, aztreonam 2g IV. Emergent surgery was performed with the aide of urology, obstetrics and gynecology and general surgery. Initial debridement involved the right lower quadrant of the abdomen down to the right inguinal canal (36cm x 15cm x4cm), and right hemivulvectomy with extension to presacrum (30cm x 7cm x 8cm). No rectal involvement appreciated on proctoscopy. Gram Stain demonstrated many gram negative rods, many gram positive rods, and many gram positive cocci in chains/pairs. Anaerobic cultures grew bacteroids species. Additional operations were required. On post-operative day (POD) number one, additional right lower quadrant debridement (42 x 15 x 4 cm) and anogenital debridement were carried out. POD#4 involved perianal and right gluteal debridement with diverting end colostomy. POD#7 involved exploration of right pelvic/gluteal wound due to extension into pelvic floor musculature and retroperitoneum of the pelvis. POD#17 resulted in split thickness abdominal (425sq cm) and gluteal (75sq cm) skin grafts with right labial closure.

Discussion

Fournier's gangrene is a rare fulminant form of necrotizing fasciitis in the anogenital region caused by a synergistic polymicrobial infection, leading to a high mortality rate. Infection and necrosis can spread 2-3 cm/hour. Despite contemporary management, morbidity and mortality remain as high at 45% and is found to be higher in women than in men. Diabetes mellitus (DM), cortisone use, impaired immunity, older age, chronic ethanol use, and urogenital trauma are risk factors for FG. Of the risk factors associated with FG, DM has the highest mortality rate. BMI >30 is also considered a predisposing factor. Fournier's gangrene constitutes a surgical emergency, and early diagnosis with aggressive treatment can decrease mortality. Once the diagnosis is made it is crucial to start broad spectrum antibiotics to cover for the polymicrobial nature of this infection. The initial 72 hours have the highest mortality rate. An average of 3.5 procedures is required to debride necrotic tissue and to manage complications; 40-60% of FG cases require a stoma for management of the infection. The purpose of this case presentation is to highlight the rarity of Fournier's gangrene in a female, the importance of early & aggressive treatment, & the need for multispecialty collaboration in care.

Conclusion

Although Fournier's gangrene was originally described as a type of necrotizing fasciitis in males, it may rarely be found in females as well. Certain risk factors can lend to the environment which allows this fulminant infection to occur. Uncontrolled diabetes mellitus, obesity, tobacco use, and unsterile technique in lancing of a labial abscess precipitated this infection in this particular patient. Collaboration between general surgery, OB/GYN, urology, infectious disease, and PT/OT resulted in prompt diagnosis, debridement, treatment, and optimization of care for this patient

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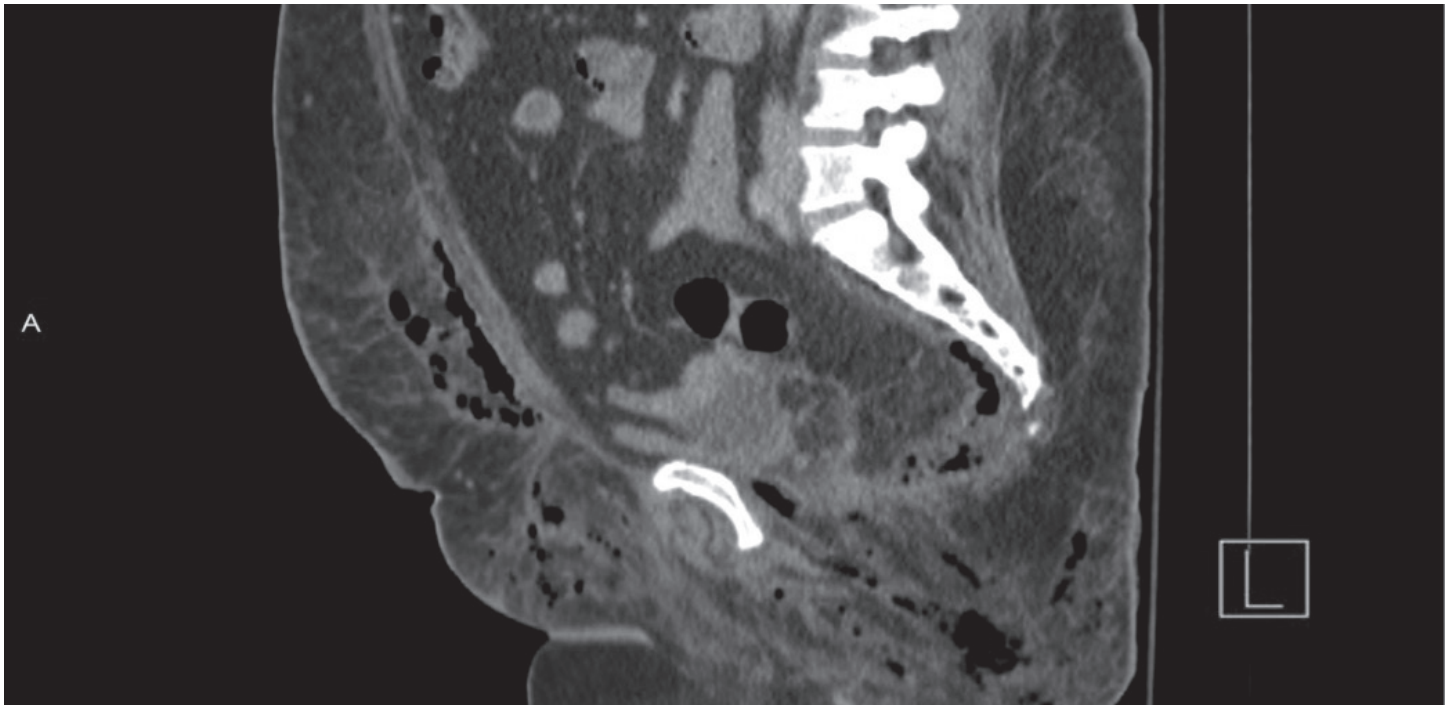

Impact of Chemoprevention Indication Score (CIS) on Uptake of Preventive Therapy

by Amanda Christian, M.D.; Patrick Pham, MSIII; Portia Siwawa, M.D.; Rakhshanda Layeequr Rahman, M.D.; TTUHSC Breast Center of Excellence, Department of OB/GYN

Introduction

Approximately 200,000 women are diagnosed with breast cancer every year in United States (1). The American Society of Clinical Oncology (2), US Preventative Task Force (3), American College of Obstetrics and Gynecology (4) and the National Comprehensive Cancer Network (5) recommend the use of tamoxifen for prevention of breast cancer in women whose benefit outweighs the risks. Many women at high risk of breast cancer are never offered chemoprevention by their primary care physician (6).

We developed the Chemoprevention Indication Score (CIS) to enhance the uptake of chemoprevention by eligible patients via evidence-based risk/benefit calculation in an efficient manner. This study demonstrates the impact of the use of CIS score in a high risk clinic on patient uptake of preventive therapy.

Materials and Methods

A retrospective analysis of a prospectively maintained database was performed. Data from patients from the Texas Tech University Health Sciences Center Breast Center of Excellence, Risk Assessment and Prevention Program (RAPP) from January 2010 to December 2014 were cross-tabulated using CIS scores and rates of uptake of chemoprevention.

Results

Between January 2010 to December 2014, 157 patients were enrolled in RAPP. Thirty-one patients were under the age of 35 which precluded the calculation of Gail score. The remaining 126 patients underwent CIS calculation and counseling regarding chemoprevention. Overall, the rate of uptake of chemoprevention was 40.8%. 39 (76.47%) patients took tamoxifen, and 12 (23.53%) took raloxifene as preventive therapy.

Conclusion

The Chemoprevention Indication Score (CIS) enhances the uptake of chemoprevention by patients attending RAPP.

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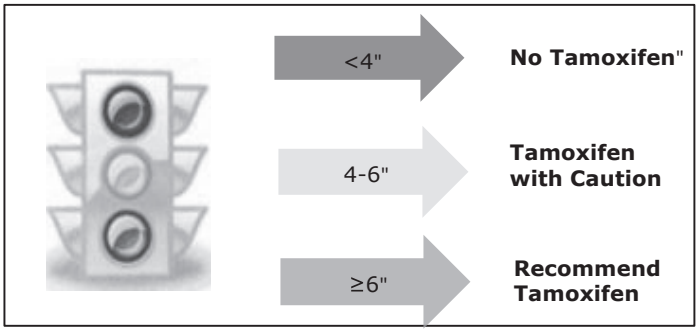
Chemoprevention Indication Score (CIS) Calculation

	1	2	3
Gail Risk Score	≤2%	2-3%	>3%
Age	≥60yrs	50-59yrs	<50yrs

Hysterectomy:	Add 3
Oophorectomy:	Subtract 2
Significant Co-Morbid Conditions, e.g. Stroke etc:	Subtract 3
DVT/PE and Endometrial Cancer:	Absolute Contraindications



Chemoprevention Indication Score (CIS) Interpretation

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Pharmacist Dispensing of Naloxone Without a Prescription: A New Tool to Prevent Opioid-Related Deaths

by Keith Chow, Pharm.D.; Eric J. Maclaughlin, Pharm.D., FCCP, FASHP, BCPS

New Tool to Combat the Epidemic of Opioid Overdoses

The United States is currently in the midst of an opioid overdose epidemic. The Centers for Disease Control (CDC) has noted a 200% increase in deaths from opioids since 2000, with 47,055 overdoses occurring in 2014 alone (1). That year saw the highest number of opioid overdose deaths on record; opioid deaths were 1.5 times more common than death from motor vehicle accidents (1). Approximately three-quarters of deaths from drug overdose are unintentional (2).

Nowhere is the problem of opioid overdoses more evident than in Texas. Texas has four cities in the top 25 for opiate abuse problems and has the second highest health care cost of opioid misuse in the United States (3). However, on June 18, 2015 the Texas Pharmacy Association announced a new tool to help combat opioid overdoses. The new rule allows pharmacists to dispense naloxone to those at risk of overdosing on opioids as a "standing order." Texas is now one of several states where naloxone may be obtained without a prescription at some pharmacies, joining California, Oklahoma, Massachusetts, Washington, Rhode Island, and others (4).

Background on Naloxone

Naloxone works as an antidote to opioid overdoses by preventing or reversing effects such as sedation, respiratory depression, pain suppression, and hypotension (5). Naloxone exerts its effects by competitively binding to the same mu (μ) receptor as opioids that elicits both the analgesic and respiratory depression effects (2). Naloxone can be given via a variety of routes including intravenous, intraosseous, intramuscular, subcutaneous, intranasal, and inhaled (2). The onset of action is less than two minutes when administered intravenously (5). However, subcutaneous or intramuscular injections have a slower effect typically up to 6 minutes (1). In the ambulatory or community setting, the intranasal form is most often used due to ease of use and relatively fast onset of action that is similar to intravenous administration (5).

The duration of effect of naloxone can vary between 20 to 90 minutes depending on the route and dose administered (1). This short duration can create a problem when naloxone is administered in the setting of a long-acting opioid overdose (e.g., methadone), as the reversal effects may wear off. In this situation, doses are typically administered repeatedly (5). Naloxone also has the benefit of having no adverse effects except when precipitating an acute opioid withdrawal (1).

Senate Bill 1462 and Texas Pharmacy Association

On June 18, 2015, Senate Bill 1462 was passed, creating a physician signed "standing order" allowing authorized pharmacists to dispense naloxone without a prescription (6). Naloxone provided as the intranasal form can be given either to the patient or a third party.

Before dispensing of naloxone can occur via standing order, Texas pharmacists must complete a one hour course from the Accreditation Council for Pharmacy Education and Texas Pharmacy Association (3). Starting August 1, 2016, the course will be offered free of charge (3). The training will cover which patients may be dispensed naloxone, those who may be included under the standing order, and how to administer naloxone (7).

Community Pharmacy Availability and Administration

Intranasal naloxone is available at most community pharmacies including Walgreens and CVS. It is available as an intra-nasal atomization device, as a kit containing two prefilled syringes with atomizers, or as a talking autoinjector. The intra-nasal kit costs as much as $150, while the intra-nasal device is approximately $140, and talking injector $3800 (8,9). Some insurance companies may provide coverage, though a copay could be required. Naloxone is covered by Medicare, Medicaid, and HealthSelect plans. For other insurance plans, it is recommended to contact the program representative.

Patient or caregiver counseling and education is critical for naloxone to be effective. The intranasal naloxone, when provided as a syringe for intranasal administration, must first be assembled, which involves removal of the yellow plastic cap from the needless syringe, then removal of the red or purple cap from the glass naloxone container, then attaching the atomizer to the needless syringe and twisting onto the glass naloxone container on the other end of the syringe. Detailed instructions on how to prepare the device are available online (10).

Those administering naloxone intranasally should be instructed to tilt the patient's head back and spray approximately half of the container into one nostril, then half in the other nostril. If no response is noted, another naloxone container should be administered following the same procedure (11). Patients and/or caregivers should be instructed that a response should be seen within 2-3 minutes, and the duration of activity may be up to 90 minutes (5). First responders should provide breathing support after administration of naloxone (12). The patient should then be taken to an emergency room and observed once stable for transportation (12).

Conclusion

Starting August 1, 2016, pharmacists in Texas are able to dispense naloxone without a prescription to patients at risk of opioid overdose. This new law is part of the Texas Pharmacists Associations Saving Lives Initiative which focuses on providing pharmacists the ability to dispense and administer lifesaving medications. With the sharp increase in opioid overdose deaths, this action may help reverse the trend of opioid deaths and provides another method of protection for patients who are at risk (1). Naloxone may be available at most community pharmacies, with the most popular administration form being an intranasal device.

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Rhino-Orbital-Cerebral Mucormycosis in a Patient with Diabetic Ketoacidosis

by Haily Wallace, M.D.; Marion Tan, M.D.; Tofoul Nour, M.D.; Siu Han Abate, M.D.; Beverly Nixon-Lewis, D.O.

Background/Introduction:

Diabetic ketoacidosis (DKA) is a medical emergency that requires prompt recognition and aggressive management. DKA is characterized by the triad of hyperglycemia, anion gap metabolic acidosis, and ketonemia. A precipitating event such as inadequate insulin management or infection is often identified in patients with DKA. Furthermore, mucormycosis is a life threatening fungal infection that rarely infects healthy individuals. However, patients who are immunocompromised because of diabetic ketoacidosis, neutropenia, organ transplantation, or increased serum iron levels are at significantly increased risk. This specific fungal specimen has the enzyme, ketone reductase, which allows these organisms to thrive in high glucose, acidic conditions. Individuals with diabetic ketoacidosis provide an ideal environment that stimulates this growth. This infection is best known for its rhinocerebral presentation but can infect lungs, skin, central nervous system and the gastrointestinal tract. In DKA patients, the presentation is acute with rapid progression, initiated with sinonasal involvement that can progress to the orbit and brain.

Case:

A 43 year-old male presented to the emergency department with left facial numbness, left eye pain and diplopia. The symptoms had been worsening over the past 4 days. He also complained of nasal discharge, cough, difficulty swallowing, nausea, vomiting, polyuria, polydipsia and headache. He reported 50 lb. weight loss in the past 2-3 months. His past medical history included insulin-dependent diabetes; he was non-compliant with medications, blood sugar monitoring and follow-up physician visits. On presentation his physical exam findings included blood pressure of 158/90 mmHg, heart rate of 101 beats per minute, respiratory rate of 18 breaths per minute, and temperature of 97. 5 degrees Fahrenheit. He had left eye ptosis and decreased visual acuity, left facial droop and decreased sensation. Further eye exam revealed rapid deterioration of vision in the left eye including no visual perception, ophthalmoplegia and no pupillary response. Oral cavity exam showed black eschars on the left hard palate.

Laboratory tests revealed an elevated glucose, normal white blood cell count of 10.8 and elevated beta-hydroxybutyrate of 9.2 mmol/L. Fungal culture grew heavy growth of mycelial fungal forms, and imaging revealed mild enhancement of the deep anterior aspect of the left temporalis muscle and left pterygoid musculature, moderate mucoperiosteal thickening involving left maxillary, sphenoid, and ethmoid sinuses consistent with chronic sinusitis and left periorbital (preseptal) soft tissue swelling.

The patient was admitted to the intensive care unit for diabetic ketoacidosis (DKA), and rhino-orbital-cerebral mucormycosis. He was treated with amphotericin B, intravenous insulin and electrolytes and underwent surgical debridement. His clinical course involved resolution of DKA, but worsening visual acuity with blindness in left eye. The fungal infection continued its spread to right side of face and orbit.

Discussion:

Mucormycosis is a fungal infection caused by the inhalation of spores of the order Mucorales. It can involve the sinuses, brain, lungs, or skin and typically occurs in a weakened immune system. This fungus is frequently found in soil, and individuals are exposed on a daily basis. In healthy individuals, the spores are transported to the pharynx by cilia and are cleared through the gastrointestinal tract; spores that are inhaled into the lungs are cleared by phagocytes. However, in immunocompromised individuals the spores seed the nasal turbinates and are angioinvasive and infarct infected tissues. The most common risk factor for mucormycosis is diabetes.

Much like this case presentation, individuals with rhinocerebral mucormycosis present with:

- Sinus pain or congestion
- Headache

- Nasal ulceration/necrosis
- Fever
- Dark nasal/palate eschar
- Proptosis
- Erythema of skin over sinuses
- Periorbital or facial swelling
- Ophthalmoplegia
- Decreased vision
- Ptosis
- Cranial neuropathy

The diagnosis is often made with CT of MRI scans or fungal cultures, though cultures often yield no growth. Histopathological identification of an organism with a structure typical of Mucorales may be the only evidence of infection. Management includes surgical debridement, administration of amphotericin B and control of the underlying immunocompromising condition. Complications include blindness, cavernous sinus thrombosis, nerve damage and death. This case is significant to health care providers because of the increasing prevalence of diabetes mellitus, cancer and organ transplantation.

This leads to increased risk for mucormycosis infection due to increased immunosuppressive states. Prevention and early detection are important because progression of mucormycosis is usually very rapid. The overall mortality from rhino-orbital cerebral mucormycosis ranges from 25-62%. Early recognition is essential to increase chances of survival. Despite aggressive therapy, this infection has a high mortality rate.

Conclusion:

Prompt recognition of both diabetic ketoacidosis and mucormycosis with early and aggressive therapy, which includes surgical debridement and antifungal therapy, is necessary in patients with this devastating disease. Diabetics in ketoacidosis are disproportionately affected with the rhinocerebral mucormycosis presentation. The overall mortality rate is approximately 50%, although early identification and treatment can lead to better outcomes. Unfortunately, this patient's encounter with mucormycosis was a fatal one.

With the increasing prevalence of diabetes and other immunocompromised states, mucormycosis must be on each physician's differential list for early diagnosis and aggressive therapy to occur. In addition, further scientific investigation on identification and pharmacological management is warranted on this topic as the incidence of mucormycosis rises.

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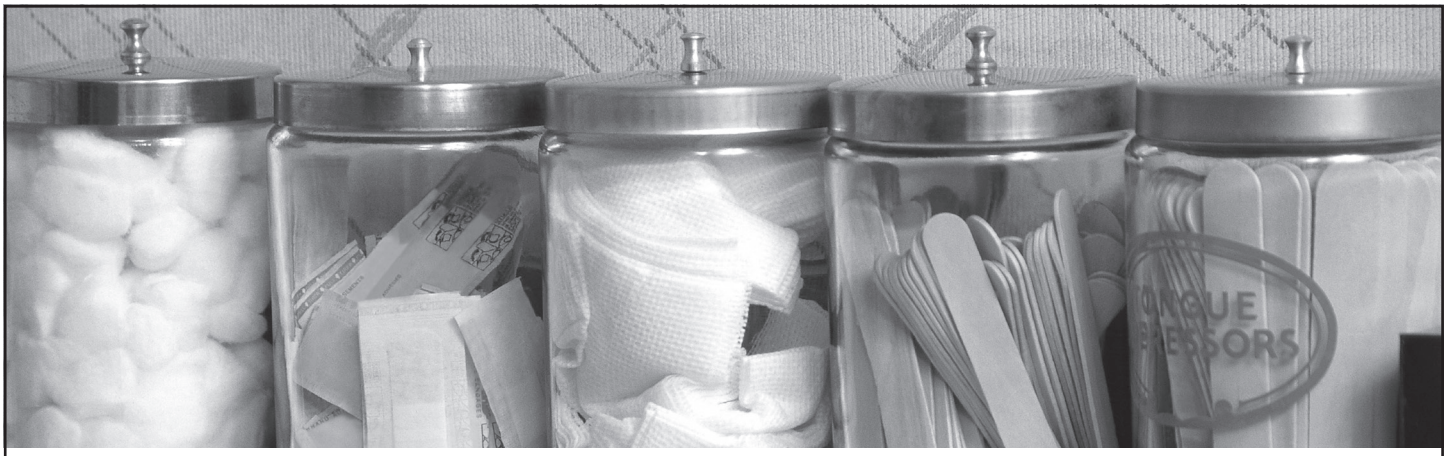

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Loxoscelism: A Spider's Harmful Bite

by Morgan Black, M.D.; Kim Nguyen, M.D.; Seth Wilhelm, M.D.; Evelyn Sbar, M.D.

Introduction:

The brown recluse, or "fiddleback" spider (Loxosceles reclusa), is native to the southern United States, loves shady places, and packs a venomous bite. Physical contact with humans is rare because of their "shy" nature (2), and most bites do not cause serious symptoms. Most bites cause a localized skin reaction, but systemic complications can be as high as 16% (1), and can include acute hemolytic anemia and disseminated intravascular coagulation (DIC), which could require hospitalization and transfusion of blood products. Differential diagnoses include community acquired MRSA infection, drug-induced hemolytic anemia, and undiagnosed hereditary anemia.

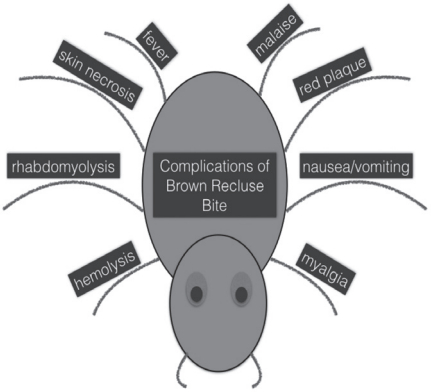
Case:

A 27 year old female with jaundice, epigastric pain, vomiting, and fever presented to the emergency department. She reported a puritic, erythematous spider bite on right deltoid one week after she had been napping in her garage. She developed a diffuse morbilliform rash after the bite. She went to her PCP and received two intramuscular injections of ceftriaxone as well as oral trimethoprim/sulfamethoxazole and a dose pack of prednisone. Four days after the bite occurred, she developed fever, dark urine, and jaundice. She then presented to the emergency department and was admitted. Her malaise and myalgia had increased, and her temperature reached 101.4 degrees Fahrenheit. While in the emergency department, her blood pressure was 108/78 mmHg, heart rate was 101 beats per minute, respiratory rate was 20 breaths per minute and her temperature was 100.2 degrees Fahrenheit. She reported no known drug allergies. On physical exam, she was found to have a 1-cm ulcerated lesion on her right deltoid without active bleeding. She also demonstrated erythematous macular patches on her right arm and jaundice as well as generalized pallor. Pertinent lab findings included elevated LDH, reticulocytosis, hyperbilirubinemia, and progressive anemia. She was treated with two units of packed red blood cells on the second day after a low hemoglobin of 5.7 g/dL

developed. She was hospitalized for 5 days and was given the final diagnosis of acute hemolytic anemia secondary to Brown Recluse bite. Her jaundice, pain, and hemolysis resolved.

Discussion:

Brown recluse spider venom contains sphingomyelinase D, which is thought to be responsible for neutrophil activation and skin necrosis (necrotic arachnidism) (3). There is antivenom supplied in South America, but not in the United States. Victims of their bites present much like this case. The identifiable arthropod bite ranges from slight erythema to a large, necrotic eschar. Systemic symptoms can occur later and include ones listed in the spider diagram below.



Management focuses on supportive care and on treatment of acute hemolytic anemia (4). Supportive care includes fluid resuscitation for dehydration, antiemetic medication, and, if needed, transfusion for severe anemia. Folic acid may need to be supplemented and intravenous steroids my be indicated for systemic symptoms. For necrotic wounds, erythromycin or dapsone may be started.

Significance of case

While rare, there are well-documented cases of brown recluse venom causing acute hemolytic anemia. It is important for physicians to be aware of the signs, symptoms and complications of brown recluse spider bites in the southern United States. Treatment includes the use of conservative, supportive management with high suspicion for disseminated intravascular coagulation (DIC) and close monitoring of anemia and systemic symptoms. More severe complications have higher frequency in children and adolescents (1). Overtreatment of localized skin symptoms is very common, and alternative diagnoses like MRSA should be considered (5). As in this case, most instances of hemolytic anemia are self-limiting.

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Happy Holidays

from the Potter-Randall County Medical Society Retired Members

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Cervical Cancer: Do We Deserve A Cure?

by Luke Wendt, D.O.

In an attempt to keep me awake while driving through the winding, climbing mountains of southwestern Colorado late at night, my wife engaged me in conversation about Human Papilloma Virus (HPV) vaccination, a topic we don't completely agree on. While advocating my argument for vaccination, I found myself saying aloud to my wife, "we don't deserve to cure cancer." As a physician it goes against the Hippocratic oath I swore to uphold to say we don't deserve a cure. As a son, husband, father, and friend to people who have fought cancer, and some who have lost, it is sickening to say. But I can't help but wonder, are we deserving of a cure to cancer if we are unwilling to use it?

HPV is responsible for virtually all cervical cancers. There are low-risk types and high-risk types. HPV 16 and 18 are the most carcinogenic and are responsible for approximately 70% of all cervical cancers. HPV is responsible for causing five other types of cancer as well: anal, penile, oropharyngeal, vaginal, and vulvar cancers. This virus is so prevalent that it is estimated that, within four years of becoming sexually active, 50% of individuals will be exposed to the virus with a lifetime exposure risk of 90% for men and 80% for women.

Although HPV infection typically clears within 1-2 years through natural immune responses, a small portion of individuals are unable to clear the infection. Typically we are able to identify women with persistent infection through screening pap smears. Screening, unfortunately, requires patients to be fastidious about their check ups. Otherwise, infections become preinvasive carcinomas and eventually infiltrating carcinomas.

In 2006, a breakthrough in cancer research called Gardasil was brought to market by Merek & Co. The vaccine was designed to produce an antibody-mediated response protecting against two low-risk HPV types (6 and 11, which are responsible for genital warts), and two high-risk HPV types (16 and 18, which are responsible for 70% of cervical cancers). The vaccine is a three-dose series approved for males and females 9-26 years of age. The CDC recommends starting the series at 11 or 12 years of age. More recently, in 2014, a nine-valent vaccine was developed to cover five additional high-risk HPV strains; it protects against 90% of all cervical cancer-causing HPV. The nine-valent vaccine is appropriately named Gardasil 9.

So, with the advent of a cure to eliminate 90% of cervical cancer caused by HPV, why isn't every 9-26 year old seeking this protection? This is where arguments ensue and misinformation abounds. There are two buzzwords that stigmatize this cure: vaccination and sexually transmitted infection.

Vaccination is an imperfect mode of herd immunity that serves to protect the greatest number of people from infectious diseases. This method of protection has all but eradicated many lethal and debilitating diseases. It serves to protect the young, old, healthy, and sick. As a human race it has been one of our greatest feats to come together and immunize ourselves for the good of the "herd." Unfortunately vaccination has fallen out of vogue due to misinformation in the media and a mass misunderstanding that is out of the scope of this article. As with all immunizations, the HPV vaccine has been extensively studied by the FDA and continuously monitored by the CDC for any safety concerns. To date there have been no serious adverse events confirmed by the CDC and FDA with regards to the three types of HPV vaccinations.

Perhaps the bigger stigma surrounding HPV vaccination is the fact that the virus is spread most commonly through sexual contact. Many fear that with vaccination an individual will become sexually active at a younger age. This has been well studied and is absolutely contrary to the research. Multiple studies have shown HPV vaccinated children are no more likely to engage in sexual activity at a younger age than those who have not received the vaccine. Some parents also feel that their child will remain abstinent until marriage at which time they will marry a similar spouse, thus negating the risk of exposure to HPV. Abstinence is a personal decision based on moral and religious beliefs. It is something that is ever evolving and changing throughout a person's life. Therefore, withholding the HPV vaccination from a child based on a parent's expectation of future abstinence is flawed logic. Even if an individual remains abstinent until marriage, they cannot rely on their partner to have chosen the same.

Cancer is cancer, whether it is related to a STI or not. It affects hundreds of thousands of individuals, which in turn affects their loved ones. The National Cancer Institute reported that in 2013, approximately 10 billion dollars were spent in funding cancer research. Why are we hopeful to find a cure for some cancers but not others? Why is curing one cancer more noble than another? According to a 2015 CDC report, only 40 percent of girls and 21 percent of boys in the U.S. are receiving the recommended three doses of the HPV vaccine. This falls far short of the goal of 80 percent by the end of this decade, as set forth by the U.S. Department of Health and Human Service's Healthy People 2020 mission. We deserve a cure for cancer. We have a cure for one type of cancer. It requires vaccination of a sexually transmissible infection that 80-90% of us come in contact with during our lifetime. My wife and I may have differing opinions regarding aspects of the HPV vaccine, but we both cherish our children and their future families. Cervical, penile, anal, oropharyngeal, vulvar, and vaginal cancer could be virtually eliminated from their lives with a simple three-dose vaccination.

For more information on cervical cancer, HPV and the vaccine, visit mdanderson.org.

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Screen Mothers for ESBL to Prevent Infant Sepsis

by Mary Elhardt, PGY2; Bethany Wohletz, PGY3; Soleil Arrieta, M.D.; John Slaton, D.O.

Introduction

The incidence of Extended Spectrum Beta Lactamase (ESBL) *Enterobacteriaceae* infections is increasing worldwide, and the prevalence varies in each country. Infections with these organisms are challenging to treat and are associated with increased patient morbidity and mortality. In US hospitals, the frequency of *E. coli* ESBLs is about 11.9% of patients (1). ESBL infection in children has tripled in the last decade, representing about 0.92% of all pediatric infections (2). A Texas study in 2011 reported 6.6% of pediatric Enterobacteriaceae contained ESBL (2). These infections have been increasing in our Amarillo Family Medicine service in the last year. Although well characterized in adults, control measures for ESBL producing bacteria are less appreciated in children. Children are particularly vulnerable to ESBL infections due to the lack of broad-spectrum antibiotics approved for use in pediatrics. This case study investigates the common etiologies of ESBL in children less than three months old, and offers possible solutions to help prevent these infections in infants.

Case Report

An 11 week-old-male born at term presented to the BSA Emergency Department in Amarillo with a chief complaint of fever. He was previously seen by his pediatrician and diagnosed with an upper respiratory tract infection. His congestion and cough seemed to have improved, but he continued to have fever. When he was seen in the ER, he had a three-day history of 104.5 F fever, irritability, and decreased PO intake. The parents denied retracting the foreskin of the infant's penis during bathing. The patient had no past medical history of infections; his vaccinations were not up to date. Birth history was complicated with oligohydramnios, but he was delivered at term via spontaneous vaginal delivery. He had no extended NICU or hospital stays. He had no surgical history. His parents did not smoke, drink alcohol, or use illicit drugs, but he did live in a crowded environment. Multiple extended family members lived in the small home, creating crowded living conditions. Family history was notable for a grandmother with a history of ESBL UTIs. He did not attend daycare.

His vitals were within normal limits except for tachycardia to the 200s. Physical exam revealed irritability and lethargy. The patient grimaced with palpation of the abdomen. CMP was within normal limits, but the patient's CBC revealed a WBC of 25.9. Urine gathered in the ER was cloudy and was positive for blood. Nitrites and leukocyte esterase were positive. White blood cells were too numerous to count, and many bacteria were present.

This patient was diagnosed with sepsis secondary to UTI. He was admitted to the pediatric floor. IV Rocephin was started, and blood and urine cultures were obtained. However, two days later, the patient still met sepsis criteria. His vitals did not return to normal limits. WBCs continued to trend upward. The patient appeared more lethargic. The results of a renal US revealed bilateral hydronephrosis and suggested posterior urethral valves and vesicoureteral reflux. Blood cultures were negative, but urine cultures grew greater than 100,000 E. coli with resistance to cephalosporins, penicillins, and fluroquinolones. Rocephin was discontinued and the patient was immediately started on IV Meropenem for two weeks through a central venous line. His sepsis resolved within the next 48 hours.

Approximately one month later, the patient was back to his baseline level of functioning. VCUG was negative for posterior urethral valves or vesicoureteral reflux. He had no permanent sequela.

Discussion

ESBL *E.coli* has the ability to cleave the beta-lactam ring, which inactivates most penicillins and cephalosporins. Some strains of ESBL are also known to have resistance to fluoroquinolones, which was demonstrated in this patient. Carbapenems remain the gold standard to combat ESBL. This patient's sepsis did not resolve with Rocephin, but his sepsis quickly resolved after he received IV meropenem. Treatment of UTI with carbapenems is usually for 14 days with adjustments made for clinical responsiveness if needed.

This patient had no discernible sequela from the infection. Yet, the morbidity and mortality of ESBL infections around the world is staggering. One study conducted in Tanzania demonstrated a fatality rate of 71% in children with sepsis due to ESBL, compared to 39% in children without ESBL pathogens (2).

The sequelae after developing an ESBL infection can be severe. Infants as young as a few hours old can develop sepsis or meningitis. Infants can further harbor ESBL for up to two years after birth, contributing to abdominal infections, UTIs, and skin infections later in infancy.

There are numerous sources contributing to the etiology of ESBL infections in the pediatric population. Community carriage occurs, and the risk is increased if the patient is living with an infected contact. The colon is the most common reservoir for ESBL. ESBL has also been found in breast milk, but studies are conflicting. In addition, horizontal transfer can arise amongst hospital employees who ignore washing their hands and following contact precautions. Carriage rates increase in patients who had extended stays in hospitals or were in the NICU (3). Maternal-neonatal transfer during labor has also been demonstrated (4).

By knowing the etiologies of these infections, we can possibly determine how to prevent the spread of these resistant bacteria. This patient did have a maternal grandmother with history of ESBL UTI. The patient's mother did not have recent history of infections, but we

| *continued on page 34*

were unable to determine if she was a possible carrier. We also were not able to obtain stool samples while the child was a newborn. Therefore, in this particular case, it was not known whether the patient contracted the infection from his grandmother, or from maternal-neonatal transfer.

Prevention of these ESBL infections can decrease the progression of more antibiotic resistance. Caregivers should be cognizant of hand washing and of contact precautions between patients when appropriate. Family members with history of ESBL infections should be encouraged to inform their family members of drug resistant infection, and to limit contact with other family members when treating a current infection. Moreover, caregivers can continue to educate the community about these drug resistant pathogens.

Since ESBL can be acquired during labor, greater research efforts toward early prevention should occur. One study revealed that weekly stool cultures for ESBL in newborn nurseries reduced colonization by 52% in a four year period (2,3). Screening in peripartum women has led to early identification, treatment, and prevention of future infections in both mothers and infants (4). Perhaps screening for ESBL should become standard to prevent this resistant infection. More studies examining the sensitivity, specificity, and the number needed to treat are required to determine the efficacy of these screening tests.

Conclusion:

ESBL infection is an increasing problem in US hospitals, especially in the pediatric population, and treatment will undoubtedly become more challenging. This case study examines a young patient who could have benefited from maternal screening for ESBL. More studies are currently needed to substantiate the necessity for maternal ESBL screening to further prevent infant sepsis. In addition, contact precautions, hand washing, newborn screening, and community awareness can further prevent other patients in the hospital from acquiring these infections.

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Hypokalemic Periodic Paralysis with Underlying Renal Tubular Acidosis

by Thanuja Chandrasena, D.O. PGY1; Sean Anderson, M.D. PGY2; Tigran Martikyan M.D. PGY3; Marion Tan, M.D.

Introduction

Hypokalemic periodic paralysis (HPP) is a rare, often autosomal dominant disease that presents with acute generalized muscle weakness and temporary paralysis, associated with hypokalemic episodes. Paralytic episodes may last up to 36 hours, but morbidity and mortality are mostly associated with the complications of arrhythmias and respiratory failure. Though reversal of symptoms can be obtained with intravenous potassium, individuals with this disease have short term intracellular shifts of K+ that rapidly reverse with supplementation. This means that, for a significant K+ deficit, the amount of K+ supplement is much less than what would be normally warranted. Chronic management of HPP is usually done with a combination potassium, acetazolamide and spironolactone.

Though rare, it has been noted that renal tubular acidosis (RTA) types 1 and 2 can occur in congruence with this disease. RTA is a disorder that causes metabolic acidosis by restricting the reduction of urinary pH. Like HPP, RTA is also known for its hereditary nature, but sporadic cases are not uncommon. Type 1 or distal RTA, is caused by impaired distal tubular acidification and is associated with hypokalemia that improves with alkali therapy. Type 2 or proximal RTA is caused by impairment of HCO_3^- reabsorption in the proximal tubule with a decreased HCO_3^- threshold, intact distal acidification mechanism, and hypokalemia that worsens with alkali therapy.

Case Report

A 14 year old Hispanic male presented with acute onset of weakness that started at 3 am on date of admission. Weakness had caused the patient to wake up in the middle of the night. He described a feeling of numbness that progressed from his back and then to his legs and arms bilaterally. He reported a history of hypokalemia for which he took a daily supplement of KCl 20 mEq by mouth. He also noted that since the age of 11 he has had similar episodes of paralysis and weakness that have become more frequent. Pertinent family history includes a paternal uncle with same condition who takes 100 mEq KCl daily for prophylaxis of hypokalemic paralysis episodes.

The patient was originally found to have a serum K+ level of 2.0. He was given 60 mEq KCl in ER and then additional 20 mEq intravenously. At this time the potassium level was checked again and was found to be 5.0. Potassium supplementation was then scheduled for 20 mEq twice daily with serum potassium checks to be done every 12 hours. If potassium was normal, the scheduled dose of potassium would be held. During his first 5 days of admission the patient would report feelings of weakness that consistently correlated with his recorded low potassium levels and would rapidly improve with supplementation. Pediatric nephrology was consulted, and distal RTA was considered as a possible cause of HPP. Lab work showed a transtubular potassium gradient (TTKG) >4, which meant there was significant potassium wasting inappropriate in the setting of hypokalemia. Also his urine pH was greater than 5.5, which is a requirement for type 1 RTA. Initially, the patient was treated with KCl and spironolactone alone, but serum K+ continued to fluctuate dramatically. After 5 days his potassium levels became stable; he was asymptomatic and able to be discharged home. He was followed as an outpatient and continued on his new medication regimen. The patient did not require future admissions for paralytic episodes.

Discussion

Hypokalemic periodic paralysis is a rare but well studied hereditary disorder associated with extracellular to intracellular shift of potassium that causes membrane depolarization and inability to excite muscle fibers, leading to paralysis. This case depicts a typical HPP presentation: an adolescent male with night time episodes. Paralytic episodes are often exacerbated by exercise followed by rest, high carbohydrate diet, or glucose and insulin infusion. In acute episodes, appropriate treatment is intravenous potassium infusion with frequent serum potassium level testing. It has been well documented that long term treatment with potassium supplementation, spironolactone, and acetazolamide reduces the number of paralytic episodes.

Since 1968, acetazolamide has been demonstrated to improve hypokalemic paralysis, though the underlying mechanism is not entirely known. Tricarico's et al., 2000 study on K-deficient diet rats showed that acetazolamide significantly increased the sarcolemma Ca2+-activated K+ channel activity, preventing depolarization in the setting of hypokalemia induced by insulin infusion. Though this treatment has been shown in some studies to be beneficial as prophylaxis for HPP, in the setting of RTA this treatment pathway needs to be avoided.

Acetazolamide was initially considered in the treatment of this patient's paralysis and for stabilization of symptoms, but with RTA this treatment is contraindicated. As a carbonic anhydrase inhibitor, acetazolamide would promote acidosis, and in a patient with RTA, this would increase K+ urine excretion. In the setting of hypokalemia and paralysis, along with identifying a hereditary component, it is important to check TTKG and acid-base state for evaluation of RTA. If an acidotic state is identified with inappropriate K+ excretion and reduced urine NH_4+ excretion (estimated by urine osmolal gap or urine anion gap) then RTA should be considered as a secondary cause of HPP. In this patient, though urine osmolal gap or anion gap were not checked, a urine pH > 5.5 and the significant improvement of K+ level stabilization with alkali treatment does make distal RTA most likely. Further testing however, should be done for confirmation of this diagnosis.

Conclusion

Hypokalemic periodic paralysis warrants full neurological work up and acute treatment with intravenous K+ for electrolyte correction. Although there are established treatment pathways for long term HPP management, secondary causes of HPP should be considered before initiating treatment. With prompt evaluation of acid-base state and urine NH4+ excretion, a diagnosis of RTA may lead to quick serum potassium stabilization and possibly shorter hospitalization. Although there are few reported cases of HPP in the setting of RTA, studies could be done to see if there is a genetic correlation due to similarly inheritance pathways.

David Coston Sabiston, M.D., FACS: A Surgical Pioneer

David Coston Sabison, Jr. M.D.

by Rouzbeh K. Kordestani, M.D., MPH

David Coston Sabiston was born in 1924, in Jacksonville, North Carolina. He was noted to be a good student and showed academic promise early on. He graduated as Valedictorian and moved into college at the University of North Carolina. He graduated from UNC with honors (Phi Beta Kappa) and entered medical school in the prestigious Johns Hopkins Hospital. He developed his interest in surgery during medical school. He was given the chance to follow his interests and was accepted into the general surgical residency under the tutelage of Alfred Blalock, MD. After completing his residency and additional time as Chief Resident, he entered the Army. He served 2 years in the U.S. Army Medical Corps in the Department of Cardiovascular Research at the Walter Reed Medical Center, at the rank of Captain.

Upon completion of his military service, he returned to Johns Hopkins as an Assistant Professor of Surgery. He also continued his interest in cardiovascular medicine by becoming a leading investigator in the Howard Hughes Medical Institute. In 1961, he received a Fulbright Research Scholarship and left to study in England at the prestigious Hospital for Sick Children and at the Nuffield Department of Surgery at Oxford University. When he returned to Hopkins, he was promoted to full Professor of Surgery.

In 1964, he returned to North Carolina as an endowed chair, the James B. Duke Professor and Chairman of the Department of Surgery at the Duke University School of Medicine. The program was noted to be up and coming and needed a leader. It was apparent that David Sabiston, M.D., would be that leader. He immediately took over the program and instilled basic scientific research as a much needed requirement in the divisions at Duke. He became the chief investigator on a National Institute of Health (NIH) project for coronary insufficiency and myocardial revascularization (and kept the grant for more than 30 years). The department began to grow and make strides in its reputation. It quickly became one of the main institutions in the United States in training in the specialty of general surgery. The program became famous for producing chairmen and leaders in surgery. A total of 146 chief residents in general surgery served under Dr. Sabiston by the time of his retirement as chair in 1994. Of these 146 chief residents, 88 remain in academic medicine, and 24 are currently division chiefs or chairmen.

Educator and Researcher

Dr. David Sabiston was renowned for his ability to train individuals. At times, his methods were noted to be harsh. There was always a level of torture that was accepted at Duke due to his methods of training. There often was the saying that: "General surgery at Duke was the decade that you spent with Dave." These methods did produce impressive results. Many of his chief residents became influential leaders in the field of medicine and surgery. Most were defined by the training methods that David Sabiston brought with him from Johns Hopkins.

Dr. Sabiston was prolific in his writings. His individual peer reviewed papers and research writings are innumerable (more than 330). However, he is most well recognized for a few specific projects. First, as a medical student in the lab of Dr. Mark Ravitch, (David) Sabiston, wrote his first scientific paper, "Anal ileostomy with preservation of sphincter: a proposed operation in patients requiring total colectomy for benign lesions." This work and its proposed surgical innovation eventually became the definitive surgical procedure for children with Hirschprungs's disease. Next, in 1962, while at Johns Hopkins, Sabiston was the first surgeon to use a vein graft from a leg to bypass a coronary blockage. Although the patient died soon after the procedure due to other complications, his innovation and use of the vein graft was soon replicated by Dr. Debakey and colleagues and helped establish vascular surgery of the heart as a new specialty, namely CARDIO-vascular surgery. While at Duke, as chairman, he was also Principal Investigator for an NIH grant studying heart disease. This grant continued through his tenure at Duke, for the course of 35 years. With the help of this grant, Dr. Sabiston made significant contributions to the understanding of cardiac blood supply and flow. He also conducted much of the early research and understanding of thrombus formation, pulmonary embolus and lysis. Moreover, soon after he established himself as Chair at Duke, Sabiston began compiling his interests in surgery in a book named, "Sabiston's Textbook of Surgery: the Biological Basis of Modern Surgical Practice." This book became a standard for all surgical training in the United States. It is now in its 19th edition of publication. Along with this, he also compiled and edited his textbook "Surgery of the Chest," through five editions. Last, but definitely not least, Sabiston became and continued as Editor-in-Chief of the journal, *Annals of Surgery*, for 27 years.

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Awards and Recognition

Throughout his surgical career, Dr. David Sabiston accomplished a great many things. In turn, he was awarded and recognized for these accomplishments.

He was elected president of the American Surgical Association, the American Association for Thoracic Surgery, and the American College of Surgeons. He was a member of a number of surgical societies. He was awarded a multitude of accolades. Amongst these were the North Carolina Award in Science Gold Medal (presented to him by the Governor of North Carolina); Michael E. DeBakey Award for Outstanding Achievement, 1984; College Medalist, American College of Chest Physicians, 1987; The Johns Hopkins University Distinguished Alumnus Award, 1995; Bigelow Medal, Boston Surgical Society, 1996; the Society Prize, the International Surgical Society, 1999.

In addition to these awards, he received multiple honorary degrees and was an honorary member of the college of surgeons of England, France, Germany, Ireland, Australia, Japan, Philippine, Argentina, Columbia and Brazil.

Conclusion

David C. Sabiston, M.D., was a truly innovative leader in the field of surgery. He brought forth new ideas and pushed older ideas to their limits. He pushed people and residents to do more and to be more. Because of his example, many other surgeons became leaders, and the Duke institution itself became what it is today.

David C. Sabiston, M.D., is an example what one individual can do for the field of medicine if they have conviction and belief. He had both. He achieved a great deal and will always be remembered for his achievements. For every surgery student and resident who reads Sabiston's Surgery, it is obvious that David Sabiston loved surgery and loved innovation in medicine and that he wanted to share his love for the art of surgery.

David C. Sabiston, M.D. was a giant in the field of surgery. Sadly, in 2009, he died quietly from the complications of a stroke. Hopefully, he and his lessons will not be forgotten.

PATIENT INFORMATION

Erectile Dysfunction (ED)

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

What is ED?

Erectile dysfunction (ED), also referred to as "impotence," is a problem getting or keeping an erection hard enough for satisfactory sexual performance. Erectile dysfunction is present in 1 of 2 men older than 40 years. Other types of male sexual dysfunction can include problems with libido (sexual interest), orgasm, or ejaculation.

Mechanisms of Erectile Dysfunction

Since erection is a vascular phenomenon that depends on blood flow to the penis, an imbalance of blood flow into and out of the penis is credited with causing ED.

Causes of Erectile Dysfunction

Two common medical problems may cause ED. These are atherosclerosis (hardening of arteries) and diabetes (which also causes hardening of arteries). Obesity is also associated with both blood vessel changes and hormone changes that negatively affect erections. Another cause for ED is damage to the nerves that cause erection, which happens in multiple medical conditions such as multiple sclerosis, Parkinson disease or after prostate surgery. Low testosterone and some medications like those used to treat hypertension can also cause ED. Since the mind is very important in the process of erection, psychological and emotional causes are common in inducing ED.

Treatments of Erectile Dysfunction

ED should be evaluated by a physician for establishing the probable cause and accordingly deciding, along with the patient, on the plan of treatment.

Lifestyle changes are the first step, including weight loss by diet and exercise. Also, reducing alcohol intake and avoiding smoking and recreational drug use are very helpful, as these factors can by themselves precipitate ED. Next, a medication suspected as causing ED, should be adjusted by the physician. If emotional and psychological factors are involved, psychosocial therapy will be effective.

Medications that increase the blood flow to the penis are safe and effective in improving ED, but should be utilized under the supervision of a physician and not self-prescribed online.

If medications do not work by mouth, they can be delivered directly into the penis, e.g. by injection. Other options include a vacuum erectile device or penile implant placed by a urology specialist via a surgical procedure. Most implants are inflatable by a device placed under the skin to result in a penis hard enough for sexual activity.

For More Information

Please visit the American Urological Association and National Institute of Diabetes and Digestive and Kidney Diseases online sites. Addresses are outlined below.

Based on JAMA patient page

Najari BB, Kashanian JA. Erectile Dysfunction. JAMA. 2016; 316(17):1838.

www.urologyheatlh.org/

www.niddk.nih.gov/health-information/heatlh-topics/urologic-disease/erectile-dysfuction/Pages/facts.aspx

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

Death due to HCV is highest. Texas Medicine (Nov 2016) – Death due to hepatitis C is at an all-time high nationally exceeding death from all top 60 infectious diseases combined including HIV and tuberculosis. The disease is curable now if diagnosed and treated earlier.

Recommendations for Hepatitis C Screening. Texas Medicine (Nov 2016) – USPSTF has endorsed one time screenings of all Americans born from 1945 to 1965 (baby boomers) for HCV, because 75% of people living with HCV are of this age range.

HIV in Texas. Texas Medicine (Nov 2016) – Total number of persons living with HIV in Texas is 83,000 in 2015, nearly 5,000 of them were newly diagnosed in the same year, 37% are African Americans. African Americans make up 12% of Texans. Texas is ranked sixth among U.S. states for HIV diagnosis among adults and adolescents.

Pre HIV Protection. Texas Medicine (Nov 2016) - Anti HIV medications are recommended by CDC to be given to persons with HIV high risk. These are persons with no HIV infection and normal kidney function with high risk behavior, e.g. injection drug users and those who live with HIV partners, have high number of partners, or sexually active in area of high HIV prevalence.

Tobacco and Cigarette Use in Texas. Texas Medicine (Nov 2016) – Although tobacco use in the last 5 years in Texas has decreased from 16% to 9.3%, tobacco use in general has remained constant at 25%, suggestive of the increase of the use of other forms of tobacco.

Cost of Tobacco in Texas Texas Medicine (Nov 2016) – Although the state of Texas realizes circa $2 billion in state revenue (taxes and settlement), Texans' annual healthcare costs approach $9 billion, half of which is direct cost attributed to hospitalizations. However, the state spends only $10 million on prevention, well below the CDC recommendations of 3.9% of revenue.

Statin for Primary Prevention with Risk Factors. JAMA (Nov 2016) – USPSTF recommends statin prevention for adults aged 40 to 75 years without cardiovascular disease who have a 10-year risk of cardiovascular event of 10%. Risk factors include any of the following: diabetes, hypertension, dyslipidemia, or smoking. This recommendation does not apply to persons older than 75 years.

Aspirin Failed Primary Prevention in Diabetics. Ann Intern Med (Nov 2016) – In a large analysis of 10 randomized controlled trials of circa 17,000 persons altogether, aspirin failed to prevent major cardiovascular events (heart attacks and strokes, and death due to them) in diabetic persons who have no prior cardiovascular disease. Of interest, there was no increase of bleeding in aspirin users. Due to conflicting literature, an ongoing large trial targeting more than 15,000 is on the way to answer the question better.

High Incidence of Falls in Older Adults. JAMA (Nov 2016) – CDC released data for falls in adults older than 65, suggesting 29 million falls in 2014 accounting for 2.9 million emergency room visits and 800,000 hospitalizations, causing 27,000 deaths. The total cost is almost $30 billion. Each fall costs an average of $10,000, and every thousand falls causes one death. These values are expected to get worse as our population ages further!

Physical Inactivity highest in Texas. JAMA (Nov 2016) – CDC reported that Texas is among the highest in the country in self-reported inactivity among adults who are 50 years or older.

Physical inactivity is one of the most important risk factors for falls in the elderly.

Recommendations for Breastfeeding. JAMA (Oct 2016) – The United States Preventive Services Task Force (USPSTF) has recommended providing interventions during pregnancy and after birth to support breastfeeding. Breastfeeding improves nutrition and immunity for the baby and helps with weight loss for the mother. It also improves the bonding experiences between the baby and the mother.

Cranberry Does not Work Anymore. JAMA (Nov 2016) – The general impression that cranberry prevents urinary tract infections in elderly women has just got reversed. A double-blind, randomized, placebo-controlled trial among 185 elderly ladies in nursing homes in Connecticut, conducted by Yale investigators, revealed no benefit from cranberry capsules for a full year on the level of bacteria in the urine of these ladies.

Stool Donation Better than Yours. Ann Intern Med (Aug 2016) – Investigators found that stool placement from a donor in the colon via colonoscopy prevents recurrence of already treated C. difficile colon infection. The stool obtained from a healthy person did better when compared with that obtained from the ill person after treatment.

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