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UNIVERSITY of FLORIDA College of Medicine Jacksonville



CHAIRMAN'S MESSAGE

Dear colleagues:

Please join me in welcoming the New Year with a renewed sense of optimism. Even though the Department of Medicine enjoyed a wonderful and exceptionally productive year, we will not be missing the past year as we look forward to the New Year to reach new heights in our accomplishments.



We have been blessed to have highly accomplished physician educators and scientists join our ranks in the Department. These new members of the faculty bring with them their expertise, superb national reputation and most

importantly a new perspective on how to promote excellent health care delivery.

In this issue we have a Focus topic by Dr. James S. Scolapio, who joined us in May 2011 as Professor of Medicine and Chief of the Division of Gastroenterology. Dr. Scolapio is an internationally recognized thought leader in nutrition and has been the recipient of multiple awards. His research efforts have resulted in over 100 peer reviewed manuscripts.

Important news you may have already heard is the naming of Daniel R. Wilson, M.D., Ph.D., as vice president of the University of Florida Health Science Center-Jacksonville and dean of the UF College of Medicine-Jacksonville. Dr. Wilson was chairman of psychiatry at Creighton University for the past 11 years and was chosen for his leadership, international reputation and sustained academic excellence. He will begin February 1, 2012, replacing dean Robert C. Nuss, M.D., who is retiring. It was a privilege for me personally to have worked with Dr. Nuss for the last 6 years and I will be looking forward to the leadership and mentorship of Dr. Wilson.

Cheers to the New Year.

Arshag D. Mooradian, M.D. Professor of Medicine Chairman, Department of Medicine



James Scolapio, M.D.

Professor of Medicine

Chief, Division of Gastroenterology

Department of Medicine

ENTERAL NUTRITION

BASIC ENTERAL PRINCIPLES

An endoscopist plays a key role in gaining enteral access ⁽¹⁾. Newer techniques and improved equipment have expanded the repertoire of enteral access procedures available to the In patients requiring short-term gastroenterologist. nutrition support, defined as less than 30 days, nasogastric or nasoenteric placement of a 10 to 12 French polyurethane tube is appropriate. Smaller tubes have a higher occurrence of occlusion. Larger tubes, i.e. 16-French, may inhibit LES function increasing risk of aspiration of gastric contents and cause significant nasal irritation. In patients at risk of gastric aspiration (i.e. delayed gastric emptying, high gastric residuals, supine position) nasoenteric feeding should be used. Seven randomized studies would suggest feeding distal to the ligament of Treitz reduces the risk of GE regurgitation and pulmonary aspiration. Techniques for achieving enteral placement include unguided bedside insertion, fluoroscopic and endoscopic guidance. Prokinetic agents (i.e. Reglan) given 30 to 60 minutes prior to placement may facilitate transpyloric position. Before beginning tube feeding, correct tube position, i.e. not in the bronchus, should be confirmed by X-ray and not solely by air instillation and auscultation. PEG tubes should be used when patient recovery is anticipated to be more than 30 days. PEG placement techniques are well established. Pre-procedure prophylactic administration of cefazolin or other similar spectrum antibiotic is indicated. Contradictions to long-term placement devices may include both mechanical and ethical and end of life issues. A speech/swallow pathologist should assess a patient's swallow function before placement of a long-term device, to prevent inappropriate placements.

Standard polymeric formulas should be used in the majority (90% plus) of patients ^(2, 3). Most formulas contain 1 kcal per cc of fluid, 44 grams of protein per liter, and approximately 30% lipid. Most standard formulas contain 84% free water. If the water requirements (30cc per kg) of a patient are not met with the formula the difference needs to be given as free water flushes via the feeding tube. For example, if a 70 kg patient's energy requirement were 30 kcal/kg/day, they would require approximately 2100 cc of formula. This would provide the patient with approximately 92 grams (2.1 liters x 44 grams) of protein, which is approx-

imately 1.2 grams/kg/day (requirements 1.0-1.5 grams/kg/day). Since the formula supplies 1,764 cc of free water (2100 cc x .84 free water) the patient will require an additional 336 cc (2100 cc-1764 cc) of free water. These formulas are lactose and gluten free. Formulas do not require dilution with water before infusion.

Tube feeding can be infused one of three ways: Bolus syringe infusion, gravity infusion or by continuous pump feeding. Bolus and gravity feeding are also referred to as intermittent feeding. Gastric delivery can use any of the three methods. Small bowel feeding should be done by continuous pump delivery to reduce gastrointestinal intolerance such as abdominal cramping and diarrhea. Infusion rates greater than 120 cc/hour may result in GI intolerances. If a patient can't tolerate the higher infusion rate a calorically dense formula can be used. In patients at risk for aspiration of gastric contents, using a continuous pump infusion may minimize this risk by avoiding rapid infusion. Feeding should be started at 20 cc per hour and advanced to the target rate over a 48-hour period. For example, the 70-kg patient described above requiring 2100 cc of formula would have a goal rate of approximately 85 cc/hr over a 24-hour period. Intermittent gastric feeding involves a larger volume per feeding than controlled continuous feeding using a pump. With gravity feeding, starting with one can of formula (approximately 240 cc) administered over one hour and advancing to the target number of feedings (4x per day), and volume (1-2 cans per feeding) is encouraged. Bolus or syringe feeding is not encouraged in most hospitalized patients. Cyclic continuous feeding, i.e. 10-12 hours during sleep may help stimulate appetite and oral intake during the day while supplying necessary supplemental calories. Certain medications (Dilantin, Ciprofloxacin, Sinemet) may bind to the formula and have reduced absorption. Spacing of medications an hour before or after feeding is recommended. Feeding tubes should routinely be flushed with at least 20 to 30 ml of additional water every 4 hours during continuous feeding and before and after intermittent feedings and medication delivery to prevent tube occlusion.

Prior to infusion, radiographic position of a nasally placed feeding tube should be confirmed. Second, patients should be placed in a semirecumbent position with the head of the bed at 45 degrees to prevent aspiration⁽⁴⁾. Blue dye added to the feeding formula has been used in the past as a marker of aspiration; however deaths have been reported in septic patients receiving blue dye. The use of blue dye is now contraindicated. Gastric residuals in gastric fed patients should be checked every 4 to 5 hours. If greater than 200 cc on two successive assessments and/or associated with abdominal distention, the tube feeds should be temporarily held. Advancement of the feeding tube into the small bowel may be required. Checking residuals of small bowel feeding is not necessary. Blood sugars should be kept below 150

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mg/dl to minimize risk of infection. Low serum sodium usually implies the patient is receiving too much free water whereas high serum sodium would suggest more free water flushes are needed. Drug nutrient interactions can occur and a pharmacist should carefully review all medications before infusing. If a patient develops loose stools (>3 per day), the cause may be multifactorial. Stools should be analyzed for C. Difficile if the patient has had recent antibiotic use. Medications should be reviewed for any that contains sorbitol that might promote loose stool. The patient may need to be changed to a fiber-containing formula.

HOME ENTERAL NUTRITION

Head and neck cancer and post stroke patients make up the largest group of patients receiving home enteral nutrition. In 1992 an estimated 154,000 patients were fed with enteral nutrition at home or in nursing homes. ⁽⁵⁾ An estimated 10% of all nursing home patients have PEG tubes. Administration in the home environment can be given with relatively low morbidity and significant improvement in quality of life for most patients. Technical advances including the PEG tube and commercial formulas have made home care possible and much simpler. Currently, Medicare will only cover enteral feeding at home in patients that require tube feeding for a minimum of 3 months as a result of inability to swallow or proximal gastrointestinal obstruction. Medicare does not cover anorexia alone.

SUMMARY

Enteral nutrition is associated with fewer infectious complications than TPN. This may be related to decreased bacterial translocation in enteral fed patients and increased incidence of hyperglycemia and infection with TPN. For short term feeding, defined as less than 4 weeks, a 10 or 12 French polyurethane nasal gastric/ enteral feeding should be used. In patients at high risk of gastric aspiration a feeding tube should be placed beyond the ligament of Trietz and head of bed elevated to 45 degrees. Standard formulas should be used in the majority of patients. Feedings should gradually be increased over a 48-hour period with careful attention to gastric residual volumes. More outcome data is needed for specialized formulas and specific disease states.

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GME CORNER



Jeffrey House, D.O.

Assistant Professor of Medicine, Division of General Internal Medicine

Program Director, Internal Medicine Residency

Special Thanks

The Internal Medicine Residency has had numerous successes over the past several years. The accomplishments of the program are often attributed to the leadership, most notably the Program Directors and Associate Program Directors. As well, the house staff themselves are rightly credited with the residency's positive trajectory. However, much of the success of the core program is due to the people that work behind the scenes. Without the support of the Program Administrators and Chief Residents, much of what we do as a training program would be impossible. Whether it is organizing meetings or banquets, compiling numerous databases, running teaching sessions, directing students, or entertaining recruits these people are the unsung heroes for our success. The job of the Program Administrator is a busy one just managing the day to day administration. However, their responsibilities span beyond just administration, and include duties such as evaluation and credentialing, recruitment, accreditation, and financial oversight. Lorna Matos, our Program Administrator, has been a tireless manager with the Internal Medicine Program since 2005. Her contributions to the program are innumerable and are a large reason for our lengthy accreditation cycle. Her influence and expertise have also helped many of the Fellowship programs.

Peggy Hogan joined our program in 2006 and has been a fixture in our GME office. Her biggest role has been recruitment, but her work with rotations evaluations and duty hours has helped the program remain compliant with the ACGME standards today.

Our newest member of the GME office is Joe Underwood. Joe comes to us from the US Navy and has had prior experience in GME through their Family Medicine program. He has picked up on the rhythm of this organization quite quickly and is comfortable in his role with the clerkship as well as curriculum and conferences.

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The program has had a history of having strong chief residents over the years. These leaders serve as the police, psychiatrists, mediators, teachers, and problem solvers. One of the hardest parts of chief residency is learning the difference between being liked and being respected. In my years as APD and PD, I have had the privilege of working with tremendous people such as Shilpa Reddy, Rosalind Alcalde, Nimish Naik, Andy Darlington, JP Pham, and Naveen Seecheran. Without their contributions we would not be enjoying the successes we're reaping today. This year I have been blessed to have chief residents, Hammad Jafri and Justin Federico, who are willing to carry the torch. Already they have had a significant impact on the learning climate and are becoming the leaders we have come to expect from our administrative chiefs.

So as we look forward to the program's future successes, it's important to take a moment to give credit to many of the people who will help make the future bright. Although not always in the spotlight, their contributions are deserving of center stage accolades.

A CLINICAL CASE

Ankur Girdhar M.D., Amita Singh M.D., Abubakr A. Bajwa M.D.; University of Florida College of Medicine-Jacksonville, Department of Medicine

<u>An unusual cause of pulmonary artery</u> <u>hypertension in a patient with chronic</u> <u>obstructive airway disease</u>

CASE REPORT

A 55-year-old African-American male with a smoking history of 20 pack years had been complaining of progressively increasing shortness of breath with exertion. His medical history was significant for stroke in the past, benign prostatic hyperplasia and chronic renal insufficiency. His home medication consisted of terazosin and aspirin.

On physical examination lungs revealed bilateral decreased breath sounds with hyperinflation of the chest, heart sounds were difficult to appreciate in view of large lung volumes but a holosystolic murmur was heard best



Figure 1: Chest X-ray shows bilateral hyperinflated lung,cardiomegaly andperihilar prominence signifying pulmonary artery hypertension and right sided enlargement of the heart.



Figure 2: Chest tomogram of the patient shows enlarged pulmonary artery in comparison to the aorta and small right sided pleural effusion.

in the tricuspid area. There was jugular venous distention 2-3 cm above clavicular border, mildly tender hepatomegaly and one plus peripheral edema till ankles. Chest radiograph and tomogram showed cardiomegaly and central venous congestion (Figs. 1 and 2).

The patient was diagnosed to have chronic obstructive pulmonary disease. When on pulmonary function testingli there was a very severe obstruction with an insignificant bronchodilator response and an increased RV/TLC suggesting air trapping. DLCO was also severely reduced. proBNP was 9289. Echocardiogram showed normal left ventricular size and wall thickness, normal left ventricular function with all segments contracting normally. Left ventricular ejection fraction was ranging from 60 to 65%. Additionally there was a moderate right ventricular enlargement, moderate left atrial enlargement without thrombus and a marked right atrial enlargement. Calculated pulmonary artery systolic pressures of 73 mm Hg and a tricuspid regurgitation jet of 3.8. A V/Q lung scan was negative for any pulmonary thromboembolism.

Right heart catheterization revealed pulmonary artery

A Clinical Case continued from Page 4

systolic pressure of 70 mm Hg, pulmonary artery diastolic pressure of 25 mm Hg with a mean pulmonary artery pressure of 40 mm Hg. Right atrial pressure was 8 mm Hg. with a pulmonary capillary wedge pressure of 14 mm Hg. Cardiac output could not be obtained due to severe tricuspid regurgitation. Oxygenation at different sections of the right side of the heart was SVC: PaO2 39 mm Hg SaO2 71.5%. RA: PaO2 61 mm Hg SaO2 92%. PA: PaO2 91 mm Hg SaO2 97%. Thus there was a step up from SVC to RA to PA in oxygen saturation, indicating L to R shunt. Trans-thoracic echocardiogram with contrast, showed immediate opacification of 50-60% of the left atrium without an obvious patent foramen ovale or secundum atrial septal defect but was suggestive of a sinus venosus atrial septal defect. Transesophageal echocardiogram showed sinus venosus defect with incorporation of the right upper pulmonary vein into the sinus venosus.

DISCUSSION

Partial anomalous pulmonary venous connection (PAPVC) is a rare congenital anomaly where one or more but not all pulmonary veins fail to connect to the left atrium. It is present in only 0.4-0.7% of postmortem examinations. These anomalous pulmonary veins usually occur in the right lung with only 10% originating from the left lung⁽¹⁾.

PAPVC often presents with few clinical symptoms and may remain undiagnosed until late adulthood. When associated with atrial septal defect (ASD), however, patient may have significant symptoms and present in early childhood due to increase in left to right shunting. About 10% of patients with atrial septal defect have one or more abnormally draining pulmonary veins ⁽²⁾.

PAPVC of three types may be suspected with an intact atrial septum. The most common variety is the anomalous drainage of the right upper and middle lobe pulmonary veins to the right atrium or superior vena cava (about 90%) as demonstrated in our patient. Drainage of the left pulmonary veins to the innominate vein via an abnormal venous channel is the next common variety.

Rarely a patient may have left pulmonary veins draining into the coronary sinus. As mentioned before, most patients with PAPVC are asymptomatic. If a significant left-right-shunt coexists, patient may develop irreversible pulmonary hypertension, pulmonary vascular obstructive disease, or right ventricular failure ⁽³⁾. Pulmonary hypertension could be a late manifestation of isolated partial anomalous venous drainage occurring due to increased pulmonary blood flow leading to reflex pulmonary vasoconstriction and eventually pulmonary vascular obstructive disease ⁽⁴⁾. The presentation varies from dyspnea and fatigue with exertion to no symptoms early in the life. A soft systolic murmur due to increased blood flow across the pulmonary valve along with fixed splitting of the second heart sound during respiration is present on

examination.

The early diagnosis of the defect can be made by echocardiography especially trans-esophageal echocardiography that has replaced cardiac catheterization as the gold standard ^(4,5). The presence of tricuspid regurgitation on echocardiography may be a surrogate of the early stages of the right ventricular overload and should be considered a marker that pulmonary vascular disease has occurred. The role of fetal echocardiography in the prenatal diagnosis of total or partial anomalous pulmonary venous connection has also been approved in a Canadian study (6). Surgical treatment should be offered to patients of PAPVC with evidence of right ventricular dilatation, mild to moderate tricuspid regurgitation, or early stages of pulmonary vascular disease in order to prevent the progression of right ventricular failure and irreversible pulmonary vascular disease. A study done by El-Bardissi et al., proved the role of anterolateral thoracotomy without the use of cardio-pulmonary bypass resulting in excellent long-term outcome when performed correctly ⁽¹⁾.

In this patient because of his previous stroke and chronic renal insufficiency he was not a good candidate for surgical closure of his sinus venosus atrial septal defect. A decision regarding trial of medical therapy was made subsequently in accordance with patient's wishes. Patient initially was started on sildenafil at a dose of 20 mg three times a day. Since patient was a high risk patient with proBNP >4000, WHO functional class 3 symptoms, right ventricle dilation per echocardiogram, medication was changed to ambrisentan and then bosentan but was intolerant to both. Patient refused inhaled iloprost because of logistic problems but agreed to a non-conventional monotherapy with intravenous prostanoid therapy which was started at a dose of 1.25 ng/kg/min. The dose was slowly titrated up to 30 ng/kg/min with which patient showed improvement in his symptoms.

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By Donald Floresca, Pharm. D.

<u>A New Threat for Antibiotic Resistance: New Delhi Metallo-β-lactamase-1</u>

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New Delhi Metallo-beta-lactamase (NDM-1) is a new antibiotic resistance mechanism that was originally reported in 2009 from a Swedish patient who suffered a urinary tract infection while visiting New Delhi ⁽¹⁾. The infecting pathogen was Klebsiella pneumoniae, which was resistant to all antibiotics except the fluoroquinolones, aztreonam, and colistin. Further genetic testing showed that the isolate also contained genetic determinants that encode resistance to erythromycin, ciprofloxacin, rifampin, and chloramphenicol. This same patient subsequently had NDM- 1 positive E. coli in fecal cultures. This is concerning because it infers in vivo transferability of NDM-1 by plasmid-mediated conjugation to other species



of bacteria, more importantly E. coli since it is a very common pathogen. Additionally, fecal colonization of multi-drug-resistant pathogens such as these may be a risk factor for subsequent clinically apparent infections ⁽²⁾.

In June 2010, the Centers for Disease Control and Prevention (CDC) alerted healthcare providers to the presence of three isolates of Enterobacteriaceae carrying the New Delhi Metallo-beta-lactamase (NDM-1) enzyme in the United States. Isolates included an Escherichia coli, Klebsiella pneumoniae, and Enterobacter cloacae, all carrying blaNDM-1, which showed resistance to beta-lactams and carbapenems. In these cases, all three isolates were also resistant to aztreonam, likely due to a different mechanism. The three patients had recently received medical care in India. As a result, the CDC has requested that carbapenem-resistant isolates from patients who have received medical care within six months in India or Pakistan be forwarded for further review through state public health labs ⁽³⁾.

Subsequent reports have described NDM-1 infections in Canada, the United Kingdom, Pakistan, Montenegro, Bangladesh, Bosnia and Herzegovina and other countries ⁽⁴⁻⁶⁾. NDM-1 producing bacteria have caused a range of infections, including urinary tract infections, bacteremia, peritonitis, lung infections, diarrhea, hardware/device infections and soft tissue infections. Some NDM-1-containing strains may be resistant to all known antibiotics ⁽⁷⁾. The emergence of multi-drug resistance mechanisms such as NDM-1 emphasize the importance of good hand hygiene, antimicrobial stewardship and infection control measures.

Clinicians must be aware of epidemiological exposure patterns of these organisms and consider their presence in patients returning from international travel (especially the UK, Pakistan, or India).

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<u>Rheumatology, Allergy & Pain</u> <u>Symposium</u>

This symposium is designed to address gaps in information and performance for rheumatologists and primary care physicians involved in the diagnosis and treatment of patients with rheumatologic and related disease conditions.

When: March 2-4, 2012

Where: Sawgrass Marriott, Ponte Vedre Beach

For more information and to register, please visit http://rap.cme.ufl.edu

Internal Medicine Update

The Internal Medicine Update conference is offered annually to provide primary care physicians and allied health professionals with an in-depth overview of current healthcare issues, and the latest treatment modalities relevant to the clinical practice of general medicine.

When: June 8-10, 2012

Where: Sawgrass Marriott, Ponte Vedre Beach

For more information please contact Kai Woods at 904-244-3158 or kai.woods@jax.ufl.edu

Jacksonville Residents and Fellows Receive Research Awards

Rohan Samson, M.D., a third-year internal medicine resident, won a second place Young Investigator Award sponsored by the Florida Chapter of the American College of Cardiology.

Samson and two cardiology fellows were chosen as finalists to present and compete at the state chapter meeting in Orlando. The competition drew entries from medical schools across Florida.

Other physicians involved in the project include Steve S. Hsu, M.D., associate professor in the department of medicine and chief of the division of electrophysiology, and cardiology fellow Junaid Ahmed, M.D. David Nabert, M.D., was also involved in the project but has since left the university.

Bijo John, M.D. Fellow in Gastroenterology won the ACG 2011 Presidential Poster Award for the presentation titled "Successful Treatment of Symptomatic, de novo Non-alcoholic Steatohepatitis (NASH) in a Patient Transplanted for Alcoholic Cirrhosis: A Case Report". His coauthors were Justin R. Cuschieri, Jorge Ortiz, and Nikroo Hashemi.

Congratulations to all involved in these research efforts.

UF & SHANDS BRAND

<u>New Year Brings Exciting Changes in</u> <u>Patient Care</u>

EPIC EMR TO GO LIVE IN JANUARY

UF and Shands Jacksonville will launch Phase I of Epic on Jan. 21, 2012. The electronic medical record system is designed to correct many problems that plague healthcare systems in treating their patients: inaccuracy, incompleteness, illegibility, inefficiency, miscommunications, divulgence of private information and a lack of patient background knowledge.

Since early 2010, UF and Shands Jacksonville have been working on the rollout, which focuses on the

identification of needs, building the core of the program for the hospital's use, testing the structure with simulated tasks, and training all users for system launch.

"Shands Jacksonville has done extremely well with this process," said Joseph J. Tepas III, M.D., professor and chief of the UF division of pediatric surgery and physician champion for Epic. "It is obvious how much enthusiasm and focus this has generated, and I think we are up to the task."

Training for physicians and staff began in early November 2011, starting with credentialed trainers. This group was responsible for training hundreds of



College of Medicine Jacksonville 653-1 West Eighth St. Department of Medicine Jacksonville, FL 32209-6511 904-244-8846; fax: 904-244-8844 NON-PROFIT ORG. U.S. POSTAGE PAID JACKSONVILLE, FL PERMIT NO. 73

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super-users, who will serve as the "go-to" people for end-users – remaining physicians and staff – whenever they have questions once the system launches. Training for these groups was intense, requiring both e-learning and instructor-led courses.



Although a project of this magnitude requires extensive investments in time, training and other resources, Tepas said the return within a few years will be well worth it. With the federal government using stimulus money to push for improvements in medical communications, it was not a matter of whether Shands Jacksonville would participate, but when, Tepas said. With the implementation of Epic, UF and Shands Jacksonville will have a state-of-the-art system that has potentially far-reaching benefits for patients and physicians alike. Patients will have their medical histories and procedures more thoroughly documented, reducing the possibility of errors and lapses in treatment. Physicians will see greater efficiency and better access to information, which can save their practices tens of thousands of dollars in the first few years alone. Studies, such as one recently published by faculty at Stanford University, demonstrate real improvement in patient survival and care after implementation of an electronic medical record.

Ultimately, in the business of saving lives, it makes sense to evolve into a fully electronic, consolidated and more streamlined way of processing medical records and health histories, Tepas said.

"We should be excited because Epic is among the best of breed, it's a top product," Tepas said. "Our staff should feel challenged, but the reward for everyone here is substantial."