Second Research Showcase 2014
November 1, 2014

Dear AAPI Members:

On behalf of the people of Cleveland, I am honored to welcome you to Cleveland for the annual AAPI dinner, in which it is always a pleasure to participate.

Cleveland serves as a leader in the health industry from the biomedical field to world-renowned hospitals and health care, making it the perfect location to host the 2017 National Convention of AAPI. I am certain that the Global Center for Health Innovation and the Cleveland Convention Center’s successful event management combined with our state-of-the-art facilities and amenities will meet the needs of the members of your national convention. Cleveland has the best cost structure compared to larger cities and provides all the amenities of a major metropolitan area. The Local Chapter, Association of Indian Physicians of Northern Ohio, is very active in helping the community and its leadership is committed to hosting the AAPI convention in Cleveland.

The City’s Health Tech Corridor is the first of its kind nation-wide and is home to major institutions like Cleveland Clinic Foundation, University Hospitals, and the Case Western Reserve Lerner School of Medicine as well as small start-up medical tech and innovation companies. Cleveland is also home to other major hospitals, such as MetroHealth System and Sisters of Charity Health System.

Located on the beautiful shores of Lake Erie, Cleveland is a vibrant, diverse and growing city with a rich history and world-class attractions. There are several conveniently located hotels and tourist attractions such as the Rock and Roll Hall of Fame, Science Center, Cleveland Horseshoe Casino and several museums in the vicinity of the Convention Center. These venues are sure to provide entertainment for the members of the convention and their guests. Cleveland also has the second largest theater district in the country and boasts the world famous Cleveland Orchestra. Our fine dining in unique neighborhoods like Little Italy and Ohio City and wonderful nightlife of East 4th Street and the Warehouse District will provide something for everyone to enjoy.

On behalf of the City of Cleveland, I would again like to welcome you here for this event as well as encourage you to host the 2017 Convention of AAPI in Cleveland. I hope you are drawn to all that we have to offer and will share in the experiences that are uniquely Cleveland.

Sincerely,

Frank G. Jackson, Mayor
Iodide mumps: A rare case of contrast induced sialadenitis after
fistulogram in an end stage renal disease patient

Authors: Raktim K. Ghosh, MD1, Houssam Mhanna MD1, Deetu Simh MD2, Meyyappan Somasundaram MD3, Keyvan Ravakhah MD, MBA4

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Introduction:

Iodide mumps or contrast induced acute sialadenitis is characterized by the rapid, painless enlargement of the parotid and submandibular glands following the use of iodinated compounds. The pathogenesis of this adverse reaction remains unclear. It may be due to an idiosyncratic reaction or related to toxic accumulation of iodide in the ductal systems of the salivary glands. The onset of symptoms can start within a few minutes to five days after contrast administration. The course of iodide-induced sialadenitis is usually benign, and rapid resolution of symptoms is expected without definitive treatment. The symptomatic management includes potentiated non-steroidal anti-inflammatory drugs (NSAIDs), steroids and dexamethasone.

Case:

We report a case of 65 years old African American female, end stage renal disease on hemodialysis 3 times/week, presented in the emergency room with complaint of facial and upper neck swelling, one day after fistulogram. The past medical history was significant for increasing right arm swelling for last 2-3 weeks and inability to access right arm AV fistula for dialysis. A dialysis percutaneous was placed in left subclavian vein for access. A fistulogram was performed to check the patency of the AV fistula with Visipaque® (Iodixanol), a non-ionic iodine containing contrast medium. It showed no evidence of the path of the right subclavian and superior vena cava (SVS). Bilateral angioplasty was performed and input fistulogram showed good resolution of stenoses with less than 10% remaining. The patient was stable in PACU post procedure and went home without immediate complications. The next day the neck肿 started to develop with lower facial and upper neck swelling. The patient did not have any signs of SVS obstruction including superficial venous prominence on chest, arm edema, cyanosis and plethoric face. She also denied any history of voice disturbances. She was admitted because of complaint of pain during mouth opening. Nifedipine was stopped for suspicion of drug induced angioedema.

Bilateral tender submandibular gland were noted on examination (Images 1&2). CT of the neck and face showed enlarged bilateral submandibular glands with infiltration of adjacent fat planes and diffuse soft tissue swelling in submandibular region and upper neck (Image 3A&B, CT scan). Initial labs including CBC, BMP, electrolytes and acid-base were essentially normal except elevated WBC count of 13,000/cu.mm but no bandemia. IL-6 and CRP values were also high consistent with ESRD. The patient was started on asparin on day 1 for a possible infective cause of sialadenitis. It was stopped next day as there were no signs of infection including fever, chill, tachycardia and no par otid discharge or submandibular duct.

A diagnosis of contrast induced sialadenitis was made and patient was started on IV hydration, sedation, fluid and pain management. Emergency intubation kit was prepared because of possible airway compromise which was not required. Hemodialysis was done within 24 hours of admission and the submandibular swelling improved significantly in next 2-3 days. The patient was discharged to a stable condition on oral/parental dose of prednisone for 2 weeks.

Discussion:

Visipaque® (Iodixanol) is a non-ionic iodine containing contrast media favoured for its molecular properties. With normal renal function, 95% is excreted unchanged in urine within 24 h.13 The risk for sialadenitis is directly related to serum iodide levels (> 10 mg/100 mL) and inversely related to normal renal function.2,3 With increasing renal dysfunction, the elimination half-life is prolonged. Our patient was at an increased risk because of her end-stage renal failure. The delay in dialysis for the first 24 h after fistulogram might have contributed further in pathogenesis. There are also a few published case reports of pancreatic mumps and transient thyroid dysfunction, whose etiology thought to be similar to iodide induced sialadenitis. Our patient did not have any of these symptoms including thyroid swelling, edematous pain, back pain and nausea and vomiting. Anyhow, lasix, THS and the free T4, T3 were essentially normal.

Role of steroids in the management of contrast induced sialadenitis has been found to be controversial in published case reports. Usual prophylactic regimens for iodide allergy were also ineffective in a previous case report proving it more idiosyncratic reaction than hypersensitivity.5 The reaction is probably a class effect, because substituting one form of low-osmolar nonionic contrast media for another did not prevent recurrences of the condition. The way to prevent recurrence of iodide mumps is to avoid using intravenous iodinated contrast in those patients again or urgent dialysis within 24 hours if the use of iodinated dye is absolutely essential.5 There is absolutely no role of antibiotic in the management of iodide mumps as the elevated WBC count is always reactive in nature.

References


ABSTRACT and POSTER RESEARCH

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Epiploic appendicitis a rare case of abdominal pain

A 54 years old female with a background history of hypertension, SVT, frequent UTI, and thyroid dysfunction on levothyroxine presented to the emergency department with 3 days history of LQD abdominal pain, and worsening low back and left flank pain. It came on suddenly and was sharp stabbing, non-radiating, non-migratory pain 8/10 in severity, getting worse couple hours after eating food. No other symptoms. review of systems otherwise unremarkable. On physical examination she was overweight with central obesity (BMI of 32), appeared uncomfortable and grimacing in pain. She was afebrile and hemodynamically stable. Her abdomen did not show signs of localized peritonism except mild left upper and mid abdomen tenderness on deep palpation. She complained of dull ache around the left lower lumbar area over the erector spine, but no muscle or bony tenderness.

Blood test did not show leukocytosis, except mild elevation of monocyte, normal electrolyte. Liver and renal function tests were within normal limits. Chest and abdominal radiograph were performed, which did not show any evidence of infection, pneumoperitoneum, or bowel obstruction. Further radiological investigation was performed with a computed tomography (CT) scan of the abdomen and pelvis with and without contrast showed a focal area of fat stranding surrounding the mid descending colon compatible with epiploic appendagitis. There was a normal appendix. She was admitted for overnight observation and treated nonoperatively with analgesia, intravenous fluids and bowel rest. She was discharged home with an oral analgesia and anti-inflammatory agent.

Epiploic appendagitis is a self-limited condition secondary to torsion or thrombosis of the epiploic appendages, usually followed by inflammation. The clinical findings are non-specific, leading to frequent misdiagnosis situations. On the other hand, the Computed Tomography (CT) features of epiploic appendagitis are quite typical and well described. Therefore, physicians should consider the diagnostic role of CT in this under diagnosed challenging disease.

Reference

Uptodate.com
Extramedullary Hematopoiesis in a patient with Myelodysplastic Syndrome

Introduction:
Extramedullary hematopoiesis (EMH) is the formation of hematopoietic tissue outside the bone marrow as a compensation of bone marrow dysfunction. It has been seen in conditions such as myelofibrosis, thalassemia, hereditary spherocytosis, polycythemia rubra vera, multiple myeloma and certain other malignancies. EMH in patients with myelodysplastic syndrome is a very rare association. We present a rare case of an 85 years old man with a history of myelodysplastic syndrome/myeloproliferative Neoplasm (MDS/MPN) as per WHO (World health organization) classification who presented with an asymptomatic right sided abdominal mass which was later found to be EMH on biopsy.

Case Description:
A 85-year-old man diagnosed with MDS/MPN eight years ago and being managed with erythropoietin (EPO) injections presented with a large asymptomatic abdominal mass on the right side which was incidentally found by his wife. Imaging studies were done to further investigate the mass. Abdominal positron emission tomography (PET) scan showed a hypermetabolic 17 x 13 x 11 cm mass in the right retroperitoneal region along with multiple moderately hypermetabolic soft tissue masses in the left and right paraspinal regions in the thoracic cavity; findings that were suspicious for primary abdominal malignancy. Computed tomography (CT) scan guided biopsy of the mass was done which showed a mixture of hematopoietic cells with scattered megakaryocytes consistent with EMH. Due to concern that the main production of red blood cells in the body was coming from the mass and that radiating it could cause harm to the patient by removing the source of production, it was decided not to radiate the mass. Instead, the patient is being managed conservatively with treatment focused on MDS. EPO injections are being continued.

Conclusion:
MDS/MPN are clonal myeloid disorders that possess both dysplastic and proliferative features but are not classified as either MDS or chronic myeloproliferative disorders (CMPO). EMH is the formation and maturation of blood cells occurring outside the medulla of the bone marrow, commonly in the liver, spleen and lymph nodes, but may occur in unusual locations such as retroperitoneal region as in this case. To the best of our knowledge, only 2 cases(1) have been reported of patients with MDS on EPO injections developing EMH. Furthermore, in these cases the EMH resolved completely after withdrawal of EPO. Other treatments include low dose radiation(3), frequent blood transfusions(3) and hydroxyurea(2). Surgery is generally avoided due to the risk of massive bleeding and high recurrence rates. We decided not to treat the mass aggressively and instead followed the patient with current medical management; the patient continued to do well at his 6 month follow up visit. On clinical exam, the mass had significantly reduced in size. It is important to know that EMH need not always be aggressively treated, in certain cases it can be followed and managed conservatively especially in patients who are asymptomatic.

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Inter-professional Evidence Based Care of Hospitalized Patients with and at Risk for Sleep Apnea Improves Care Quality

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Breen School of Graduate Nursing, Ursuline College Breen School of Nursing, Pepper Pike, OH

Purpose:
The project goal was to enhance healthcare outcomes for hospitalized patients with and at-risk for sleep apnea (SA) by increasing the ability of hospital nurses to assess for known SA, identify SA risk, and design appropriate nursing care management using an inter-professional care guideline.

Background/Significance:
Hospital prevalence of SA is estimated to be 80%, yet only 6.8% are reported, and 5.8% of patients on home therapy continue treatment during hospitalization. Adverse hospital outcomes including increased length of stay, cardio-respiratory failure, and death are associated with untreated SA. Validated SA screening tools and care guidelines are available but have not been widely adopted. Educating nurses on SA assessment, screening, and evidence-based care guidelines can improve patient outcomes.

Methods:
An educational intervention to the care team of a monitored care unit at a community hospital consisted of an overview of SA diagnosis, treatment, impact on patients’ health, and hospitalized patient outcomes, b) training for screening for SA diagnosis and continued hospital use of home PAP, c) use of the STOP-Bang questionnaire, and d) use of an inter-professional evidence-based SA care management guideline. The Obstructive Sleep Apnea Knowledge and Attitude (OSAKA) assessment was administered to the care team pre/post intervention and 30- days post implementation of the care guideline. Patient length of stay, unplanned transfer, death, and 30-day readmission were monitored for 90-days.

Results:
The intervention was attended by 41 care team members, 30 completed the Pre/Post OSAKA. Paired t-test showed significant increase in OSAKA scores post educational intervention for knowledge, attitude and confidence that was retained 30-days post implementation of the care guideline. One-way ANOVA showed no correlation between staff type, years of practice or education level and OSAKA scores. Of the 104 patients screened, 67.8% were identified as high SA risk, (21% with known SA), and 32% low SA risk. PAP therapy was received by 100% of those identified on home PAP compared to 5.5% prior to the intervention. The ALOS was shortest for the SA group (2.6 days), compared to 3.28 days (high risk) and 2.74 days (low risk). The 30-day readmission rate for the SA group was 0%, high risk/10%, and low risk 14%. No unplanned transfers to higher acuity of care or death occurred during the 90-day pilot. Identification of known SA pre-intervention was 5.5% and 21% post.

Conclusions and Implications for Practice:
Implementing and sustaining quality improvement changes designed to improve SA patient outcomes will require inter-professional collaboration led by the hospital nurse. Education provides a means to bridge the current care gap and enhance healthcare outcomes in this vulnerable patient population. National and local policy directing the care of this vulnerable population is recommended.

Title:
Inter-professional Evidence Based Care of Hospitalized Patients with and at Risk for Sleep Apnea Improves Care Quality

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Severe and Prolonged Hypocalcemia Following Zoledronic Acid Therapy in Patient With Malignant Hypercalcemia.

Introduction: Zoledronic acid (ZA) is a new long-acting bisphosphonate that has been shown to be more effective than other bisphosphonates in treating hypercalcemia of malignancy. It is important to be aware of its ability to induce prolonged and severe hypocalcemia following administration, which can be difficult to control despite aggressive calcium replacement. We report a patient with metastatic breast cancer who presented with severe symptomatic hypocalcemia after receiving ZA for hypercalcemia of malignancy.

Case Presentation: A 51-year-old female with recently diagnosed stage-IV breast cancer with metastases to axial skeleton and liver, presented with polyuria and was found to have hypercalcemia of malignancy with a calcium (Ca) level of 22 mg/dl. Her surgical history was significant for parathyroidectomy for primary hyperparathyroidism. Her other laboratory values included elevated PTHrP of 14 pg/ml (<2pg/ml) and low PTH of 10 pg/ml (15-65pg/ml). She was treated with intravenous (IV) fluids and was given a 3.3 mg dose of IV ZA. 6 weeks following ZA treatment, the patient presented with tingling, numbness all over the body and carpopedal spasm of her upper extremities. Her labs were significant for Ca of 5.2 mg/dl, ionized Ca of 0.74 mmol/L, magnesium of 1.1 mg/dl, and potassium of 2 mmol/L. Serum 25 (OH) D level was very low (5.9 ng/ml) consistent with vitamin D deficiency; PTHrP was 2.2 pmol/L and PTH of 180 pg/ml suggestive of secondary hyperparathyroidism due to vitamin D deficiency and hypocalcemia. She was started on a slow continuous calcium infusion after being given 2 grams of IV calcium and was monitored in the intensive care. She required 6-12 grams of IV calcium daily in addition to high doses of oral calcium (up to 3.375 grams), despite potassium and magnesium repletion for 10 days. Following this she was discharged home on 5g IV calcium, 100 mEq of Kcl and 2 grams of magnesium daily for 4 weeks along with Vitamin D 50,000 units three times a week. Subsequently after 4 weeks off of calcium and vitamin D supplementation, she presented again with hypercalcemia of malignancy (Ca of 16.6mg/dl) with PTHrP of 44pmol/L. She was given pamidronic acid 60 mg IV; this time she did not develop hypocalcemia as vitamin D levels were replete.

Discussion: This case illustrates the importance of identifying and treating vitamin D deficiency in patients with metastatic cancer. In this case, vitamin D deficiency together with administration of ZA, lead to severe life threatening hypocalcemia. Physicians managing hypercalcemia of malignancy should be aware of the severe side effect profile of ZA, and screen all patients for vitamin D deficiency prior to initiating therapy. We also recommend using a lower potency bisphosphonate such as pamidronic acid, especially in patients who previously developed severe hypocalcemia with ZA.
CASE

- A 75-year-old female with persistent nausea and vomiting along with abdominal pain was referred from an outside hospital on an endoscopy finding of a large gastric polyp.
- Past medical history was significant for hypertension, coronary artery disease, hypothyroidism and hyperlipidemia.
- The medications included metoprolol, lisinopril, furosemide, levothyroxine and pravastatin.
- We repeated an upper endoscopy at the Beth Israel Deaconess Medical Center and noticed a pedunculated polyp which appeared to be 9 cms in size and was prolapsed into the duodenum.
- We used a grasping forceps to pull the polyp into the stomach.
- We injected 4 cc of 1:10,000 epinephrine into the polyp.
- A 25 mm hard snare was used to resect the pedunculated polyp. The settings were zero cut and 18 coag.
- Three resolution clips were placed prophylactically on the base of the polyp.
- The resected polyp was retrieved using an endoscopic net.
- On pathology, the polyp was noted to be an inflammatory fibroid polyp.
- The patient did well. There were no complications and there was no recurrence of the polyp one year later.

Pro-angiogenic remodeling of extracellular matrix by TGF-beta

Muppala S, Frolova EG, Krukovets I, Plow EF, Stenina-Adognravi O

Extracellular matrix (ECM) plays an important role in cardiovascular functions, including angiogenesis. TGF-β induces angiogenesis and is known as an important regulator of ECM in tissue remodeling. However, specific molecular mechanisms controlling ECM composition and angiogenesis in response to TGF-β are still poorly understood. We report a novel molecular mechanism that controls remodeling of the extracellular matrix and angiogenesis in response to TGF-β.

We discovered for the first time that TGF-β stimulation dramatically increases TSP4 production (up to 10 fold) in cultured microvascular endothelial cells (EC). Thrombospondin 4 (TSP4), an ECM protein, regulates cell-cell and cell-matrix interactions. Recent reports highlight the importance of TSP4 in cardiovascular tissue remodeling and inflammatory responses, but specific stimuli leading to its upregulation still remain unknown.

Our functional in vitro assays revealed that microvascular EC from WT mice had increased migration (up to 80% increase), adhesion (up to 40% increase) and proliferation (up to 40% increase) in response to TGF-β stimulation compared to unstimulated cells, but TSP-4 KO (Thbs4−/−) cells did not have any increase in the migratory, adhesive and proliferative capacity in response to TGF-β stimulation when compared to unstimulated cells. These data suggest that increased TSP4 levels mediate the effects of TGF-β on angiogenesis. Thbs4−/− cells demonstrated significantly reduced migration (90% of WT cell migration, p=0.00008), adhesion (30% of WT cells adhesion, p=0.01), and proliferation (80% of WT cell proliferation, p=0.000005), highlighting the role of TSP4 in these processes. Consistent with the in vitro data, in vivo experimental results demonstrated that TSP4 is pro-angiogenic: TSP4 KO mice had decreased angiogenesis (65% decrease, p=0.025) compared to WT mice in the Matrigel plug angiogenesis assay.

In conclusion, we have identified TSP4 as a novel regulator of angiogenesis and found the first stimulus upregulating TSP4 production - TGF-β. The novel TGF-β/TSP4 pathway that regulates angiogenesis connects TGF-β and TSP4, suggests new therapeutic targets for regulation of TGF-β-induced angiogenesis, provides new insights into mechanisms of regulation of angiogenesis by ECM, and emphasizes the role of an ECM protein, TSP4, in angiogenesis.
**METHODS**

**SEARCH STRATEGY:**
- EMBASE, PubMed, Cochran Central Register of Controlled Trials
- Search terms: Propofol, traditional sedative agents, endoscopic ultrasonography, small bowel endoscopy, randomized controlled trials

**ELIGIBILITY:**
- RCTs, in patients >18 years who underwent small bowel endoscopy, published as full articles or meeting abstracts in peer-reviewed journals
- Studies that examined the efficacy and safety of PS and TSA for advanced endoscopic procedures
- Studies in humans, and
- Data not duplicated in another manuscript.

**STATISTICAL ANALYSIS:**
- Review Manager (RevMan version 5.1)
- Fixed or random-effect methods, depending on the absence or presence of significant heterogeneity
- g² test and I² to assess heterogeneity
- P < 0.1 or I² < 50%, significant heterogeneity
- Results expressed as mean (±SD) or mean differences with 95% CI. P < 0.05 statistically significant.

**RESULTS**

- Funnel plot of trials of propofol sedation and traditional sedative agents for Advanced Endoscopy Procedures
- The mean length of hospital stay was higher for diagnostic ERCP than for therapeutic ERCP from 1993 to 2010 (1.72 vs 0.95 days) and c.f. therapeutic ERCP in 2010 (6.2 cf. 5.3 days)
- However, the number of therapeutic ERCPs has increased over the years
- There has been a steady decline in the utilization of diagnostic and therapeutic ERCP over the same time period
- The mean length of hospital stay was higher for diagnostic ERCP than for therapeutic ERCP from 2003 to 2010 (1.72 ± 0.95 vs 1.35 ± 0.69 days)
- Funnel plot of trials of propofol sedation and traditional sedative agents for Advanced Endoscopy Procedures

**CONCLUSIONS**

- MAC for advanced endoscopic procedures is associated with shorter recovery time, better sedation and amnesia level without an increase in risk of cardiopulmonary complications.
- The overall patient cooperation is also improved with propofol sedation.
Bilateral Renal Infarction Associated to Oxaliplatin-based chemotherapy for Colon carcinoma: A Case Report

Introduction:
Renal infarction (RI) is an uncommon condition resulting from a sudden disruption of blood flow in the renal artery. RI is frequently misdiagnosed or diagnosed late because of its rarity and frequently nonspecific clinical presentation, which may result in irreversible damage to the renal parenchyma or an increase in the risk of other embolic events affecting other organs. Several reports investigating its clinical effects have suggested that most patients have atrial fibrillation, valvular heart disease and risk factors for thromboembolic events including protein C&S deficiency[1]. Oxaliplatin has been associated with renal failure/toxicity but till date, there has been no reported case of bilateral renal infarction in a patient treated with oxaliplatin. The only study that remotely mentioned of a cause and effect relation was by Khushalani et al[2]. In this study oxaliplatin in addition to a protracted-infusion of fluorouracil was used in the treatment of esophageal cancer,a patient who was not able to continue with oxaliplatin therapy because he developed renal arterial infarction. We report an unusual case of bilateral renal infarction in a patient receiving oxaliplatin.

Case Report:
A 62 year old male presented to emergency department after developing right flank pain at the time of 6th cycle of oxaliplatin infusion. He was diagnosed with colon cancer with liver metastasis in November 2012 and completed 12 cycles of FOLFOX (Folinic acid, Fluorouracil, Oxaliplatin) without Bevacizumab from cycle 8 because of positive margins. He had a similar episode of right flank pain 3 weeks ago after 6 weeks of initial 12 cycles of FOLFOX. His past medical history included left breast carcinoma on tamoxifen since November 2012 and left subtotal colectomy, intraoperative ultrasound and partial liver resection. He was restarted again on FOLFOX every 3 weeks because of positive margins. During the current admission, his vitals were 0.9 mg/dl with GFR more than 60. FOLFOX was discontinued. He had two similar episode of bilateral renal infarction in a patient receiving oxaliplatin. We report an unusual case of bilateral renal infarction in a patient receiving oxaliplatin.

Discussion:
Oxaliplatin a platinum derived alkylating agent, is approved by FDA only for colorectal cancer. However, it is used in other cancers as well. It is highly protein bound and metabolized non-enzymatically into active and inactive metabolites excreted primarily through the kidneys[3]. Like most chemotherapy agents, oxaliplatin causes common side effects like, nausea, vomiting, diarrhea, neutropenia and thrombocytopenia[4,5]. Dose limiting toxicity includes neurotoxicity, gastrointestinal toxicity, hematologic toxicity[5,6]. Cisplatin, also a platinum based chemotherapy drug, has been associated with increased arterial thromboembolic events. However, this association is based on case reports and retrospective studies[7]. The mechanisms by which cisplatin triggered vascular events is unknown, but endothelial damage seemed to play a major role[7,8].

Cases of oxaliplatin causing renal toxicity have been reported[9,10] even though they are rare. Possible causes of renal failure from oxaliplatin include dehydration, high doses, acute tubular necrosis and induced intravascular hemolysis[9,11]. Our patient was treated with FOLFOX. During cycle 6 oxaliplatin therapy was stopped because the patient developed second episode of severe flank pain which was confirmed as bilateral renal infarction by CT scan of abdomen. He had two similar episode of bilateral renal infarction during oxaliplatin infusion and no further episode for more than 8 months after discontinuation of oxaliplatin, this support a possible cause effect relation between oxaliplatin and renal infarction. Bevacizumab is less likely to be the cause of renal infarction in this case, as the patient tolerated FOLFIRI/Bevacizumab without recurrence of renal infarction. Physicians should be aware of this potential complication of oxaliplatin.

References:
Saffron

PATCH

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Early Childhood Parent Visit
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