Poster #1

CARFILZOMIB SENSITIZES MELANOMA CELLS IN VITRO AND IN VIVO TO BRAF-INHIBITOR INDUCED APOPTOSIS

Sobti S, Green EA, Tsumagari K, Murad F, Sholl AB, Hassan M, Kandil E
Presenter: Saboori Sobti
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Background: Activating BRAFV600 mutations drive tumor progression by constitutively activating MAPK signaling in approximately half of patients with melanoma. Patients with BRAFV600-mutant tumors initially respond well to combination therapies targeting BRAF and MEK, but acquired resistance leads to disease progression in most patients. The targeted therapy is generally maintained until tumor progression or major toxicity occurs, although responses are often limited in time. It is unknown whether melanoma patients achieving a complete response with targeted therapy can safely discontinue treatment.

Objective: In the present study, we assessed whether the combination of carfilzomib with selected inhibitors of BRAF benefits patients with metastatic malignant melanoma.

Methods: Melanoma cell lines SkMel 28, WM793B, and CHL-1 were used. Cell viability assay, Western blot, flow cytometry analysis, were conducted as well as a in vivo melanoma mouse model.

Results: Our data demonstrated the ability of carfilzomib to sensitize melanoma cells harboring the BRAFV600E mutation to the selected BRAF inhibitor dabrafenib, when compared with melanoma cells harboring wild type BRAF. We further confirmed that the combination of carfilzomib and dabrafenib triggers melanoma cell death by an apoptotic mechanism, evidenced by flow cytometry analysis of apoptosis using annexin V/Propedium iodide (PI) and Western blot analysis of PARP cleavage. While treatment with carfilzomib or dabrafenib alone was unable to show significant growth inhibition in melanoma cells, their combination demonstrated significant induction of melanoma cell death, when compared with control cells. In an animal model, single treatment did not influence melanoma tumor growth in mice. Interestingly, the combination of both drugs showed significant regression of tumor growth, suggesting the reliability of the combination of carfilzomib with dabrafenib in the treatment of melanoma.

Conclusion: Our data provides evidence for the reliability of the combination of carfilzomib with dabrafenib as a therapeutic strategy to overcome BRAF inhibitor resistance of melanoma in vitro and in vivo.

Poster #2

ROBOTIC AND LAPAROSCOPIC APPROACHES FOR ADRENAL SURGERY IN OBESE PATIENTS.

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Presenter: Hosam Shalaby MD
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Background: Laparoscopic adrenalectomy can be challenging in obese patients. The advantages of robotic assisted adrenalectomy have not been well studied in obese patients. Recent studies have recommended against the use of robotic approaches in obese patients undergoing adrenal surgery.

Objective: The aim of this study is to examine the difference in perioperative outcomes utilizing robotic versus laparoscopic approaches in obese patients.

Methods: This is a retrospective study of all consecutive patients with benign adrenal tumors who underwent adrenal surgery, by a single surgeon using laparoscopic or robotic approaches. Adrenal surgeries for adrenal cancer were excluded. Demographics, operative time, length of hospital stay and intra-operative complications were evaluated. Patients were divided into two groups; obese and non-obese. A sub-analysis was performed comparing robotic and laparoscopic approaches in obese patients.

Results: Out of one hundred and five patients, 50 (47.6%) were obese. 30 % of the obese patients underwent laparoscopic approach and 70 % underwent robotic approach. Operative time was longer in obese patients compared to non-obese (182.2± 75.4 min and 152.1+/-84.7 min, respectively). However, there was no difference in estimated blood loss and length of hospital stay between the two groups ($p>0.05$).
In obese patients robotic approach was associated with less intra-operative blood loss (56+/- 4.5 ml versus 156 +/-7.8 ml, p=0.04), shorter hospital stay (1.9+/-0.05 days versus 3.3+/-0.1 days, p

Conclusion: Robotic assisted adrenal surgery is safe in obese patients and is associated with less intra-operative blood loss and shorter hospital stay in obese patients.

Poster #3

ASSOCIATION OF PREOPERATIVE NODULE SIZE AND LYMPH NODE METASTASIS IN DIFFERENTIATED THYROID CANCER

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Background: Several studies have reported the association between large thyroid nodules and the increased incidence of lymph node metastasis in differentiated thyroid cancer.

Objective: We aim to investigate the use of preoperative thyroid nodule size on ultrasound in predicting lymph node (LN) metastasis in differentiated thyroid cancer (DTC).

Methods: This is a retrospective study. We reviewed all patients who underwent thyroidectomy for (DTC) by a single surgeon in an academic institution, over 5 years. The following variables were included in the analysis, clinicodemographic data, histopathological data and preoperative ultrasound features. Ultrasound features included; nodule size and the presence of internal vascularity or calcifications. We divided the patients into two groups, LN metastasis group and non-metastasis group.

Results: 139 patients were included, 28 (20.9 %) had LN metastasis and 106 (79.1%) were non-metastatic. There was no significant difference in preoperative nodule size on ultrasound between the two groups. The mean nodule size in the LN metastasis group was 2.7 ± 1.5 cm and 2.5 ± 1.4 cm, in the non-metastasis group (p=0.48). In addition, there was no association between larger nodule size and presence of LN metastasis, even in the combination with other ultrasound features such as calcification and internal vascularity (p>0.05). However, there was a significant association of LN metastasis with the presence of positive BRAF mutation (OR: 14.32, p

Conclusion: Preoperative larger nodule size on ultrasound of patients with DTC is not associated with increased risk of LN metastasis. However, the postoperative pathology tumor size showed correlation with lymph node metastasis.

Poster #4

AUTOMATIC PERIODIC STIMULATION IMPROVES RECURRENT LARYNGEAL NERVE SAFETY DURING THYROID SURGERY

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Presenter: Khuzema Mohsin MD
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Background: Continuous intraoperative nerve monitoring using automated periodic stimulation (APS) of the vagus nerve (VN) was proposed to recognize early change in function of the recurrent laryngeal nerve (RLN) during thyroid surgery.

Objective: The purpose of this study was to examine our initial experience using APS technology.

Methods: Prospectively collected data were retrospectively reviewed for all patients who underwent thyroid surgery by a single surgeon using APS technology at a single North American institution for a 5-year period. Stretch injury was established by a warning threshold alarm ≥ 50% reduction in amplitude and/or ≥ 10% increase in latency. Preoperative and postoperative direct laryngoscopy was performed for all patients.

Results: A total of 455 RLNs were at risk in 344 consecutive patients. APS alarm detected impending stretch nerve injury in 33 (9.59%) cases by 63.32 ± 13.39 % decrease in amplitude and by 27.3% increase in latency in one case. A total loss of signal (LOS) has been detected in 15 (4.36%) cases. The early change of management by releasing the causative retraction for an average of 2 ± 0.7 minutes successfully preserved the nerves in all cases with impending injury; however, there was no improvement in the LOS cases. Other than the cases with LOS, postoperative laryngoscopy showed normal vocal cord function in all cases.

Conclusion: APS technology is safe, feasible and can help in early recognition of intraoperative RLN stretch. Future studies are warranted to further examine the benefits of this technology.

Poster #5

SAFETY AND FEASIBILITY OF ROBOTIC-ASSISTED PARATHYROIDECTOMY

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Background: Robotic-assisted approach have been described for thyroid surgery to avoid a visible neck incision, especially in young females with history of healing with keloid or hypertrophic scar.

Objective: We aim to evaluate the safety and feasibility of this approach in patients with primary hyperparathyroidism (PHPT) undergoing parathryoidectomy.

Methods: This is a retrospective study, conducted in two centers; one in France and one in the United States. Patients who underwent robot assisted parathyroidectomy within 6 years period; were included. Only patients with localized preoperative studies were included. Demographic data, operative time, perioperative complications were collected.

Results: 56 patients were included. The mean age was 54.1±12.3 and BMI was 25.6±5.6. 94.5% underwent transaxillary approach and 5.5% had retroauricular approach. Only one case converted to open due to hyperplastic disease. The mean operative time was 120.7± 35.4 minutes. Five patients developed complications; one (1.8%) had seroma, one (1.8%) had superficial wound infection, one (1.8%) had transient brachial plexus injury and 2 (3.6%) had temporary vocal cord paralysis. There were no reported cases of permanent vocal cord paralysis. Curative surgery was achieved in all cases.

Conclusion: To our knowledge, this is the largest reported series on robotic assisted surgery for patients with PHPT. Robot assisted parathyroid surgery is a safe and feasible approach in selected patients with preoperatively well-localized studies.

Poster #6

POLAND SYNDROME AND BREAST CANCER: A CASE REPORT AND LITERATURE REVIEW

Hannah Kooperkamp, Ralph Corsetti
Presenter: Hannah Kooperkamp MD
Ochsner Clinic Foundation, New Orleans, LA

Background: Poland syndrome is a rare congenital disorder which encompasses a broad spectrum of unilateral chest wall and limb abnormalities. The common feature in Poland syndrome is absence of the pectoralis major muscle. It also may include mammary hypoplasia, rib defects, and limb defects. A male predominance is reported, however the syndrome may be subclinical in women. We report a case of a woman with Poland syndrome and an ipsilateral breast cancer and highlight considerations for the management of breast cancer in this setting.

Objective: Blank

Methods: Blank

Results: A 62 year old woman presented with an abnormal screening mammogram. She had grouped calcifications in the subareolar region of her right breast with a biopsy showing DCIS. The patient noted she had always had a smaller right breast. She underwent a central lumpectomy and sentinel lymph node biopsy. She was injected with dual tracers but she failed to map. Only the lumpectomy was performed. Her pathology showed DCIS with positive margins. She had a completion mastectomy. During the procedure the absence of the pectoralis major muscle and abnormalities of the ribs were noted. She did well with no further treatment.

Conclusion: We consider the management of breast cancer in the setting of Poland syndrome. Pneumothorax after a needle biopsy in a patient with Poland syndrome is reported. This complication is presumably higher in this population. Sentinel lymph node biopsy may or may not be feasible. There are associations between Poland syndrome and other malignancies including leukemias and lymphomas. This is of theoretical importance when considering radiation therapy which could further increase the risk of developing a leukemia. Natural tissue reconstruction after mastectomy options may be different because of the aberrant anatomy, however there are also flap techniques which were developed to address the chest wall asymmetry in these patients.

Poster #7

WHY SO BLUE?: A CASE OF METHEMOGLOBINEMIA IN A POST-WHIPPLE PATIENT

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Presenter: Gregory Lalonde B.S.
LSUHSC SOM in New Orleans, New Orleans, LA

Background: This is the case of a post-menopausal patient with a history of pancreatic adenocarcinoma who underwent a pancreaticoduodenectomy and subsequently developed perioral cyanosis and low oxygen saturation after the administration of benzocaine spray.

Objective: To demonstrate a case of methemoglobinemia, a rare condition in a post-operative patient, and review its pathophysiology, presentation and treatment.

Methods: On post-op day three after a Whipple procedure, the patient began to complain of oropharyngeal pain due to a nasogastric tube. A 20% benzocaine spray was ordered to alleviate this discomfort. Within hours of her first dose, she developed perioral cyanosis and an oxygen saturation of 78%, though she denied shortness of breath. Her cardiovascular exam was within normal limits, with a heart rate of 84 bpm and blood pressure of 115/64. She was advanced through increasing levels of oxygen supplementation without marked improvement in oxygen saturation, and a chest x-ray, EKG, and ABG were ordered. The chest x-ray was not remarkable for acute cardiopulmonary processes, and the EKG showed normal sinus rhythm. The blood drawn for the ABG was a chocolate brown color, and the co-oximetry reported oxygenated hemoglobin levels of 59.3% (94-100%) and methemoglobin (MetHb) levels of 41.6 % (0-2%). This confirmed the diagnosis of methemoglobinemia. The patient was transferred to the ICU, typed and crossed, and methylene blue was administered intravenously at 1mg/kg over a 15 minute period.

Results: Over the next hour there was considerable improvement in the patient's oxygenation, evident from repeated labs showing an oxygenated hemoglobin level of 91.1% and a MetHb level of 7.8%. This indicated that the patient would not require a second dose of methylene blue or other treatments such as hyperbaric therapy and exchange transfusion. The morning after the episode, she was maintaining a 98% oxygen saturation with minimal oxygen support and had a MetHb concentration of 1.7%. No adverse effects due to the temporary methemoglobinemia were noted, and the patient was discharged home from the hospital later that week after an otherwise unremarkable post-op course.

Conclusion: Methemoglobinemia is a hemoglobinopathy that occurs when hemoglobin is oxidized, creating a form that is inferior in both binding and transporting oxygen. Its diagnosis is suspected clinically with signs including hypoxia refractory to oxygen supplementation, perioral cyanosis, and chocolate colored blood. It is a side effect of many oxidizing drugs, including benzocaine. In this case, the patient was allowed to self-administer higher-than-recommended doses of a topical benzocaine spray which caused the methemoglobinemia. Although this is a condition more commonly treated by our medicine colleagues, it is important for surgeons managing post-op patients to recognize the clinical picture of methemoglobinemia and act quickly, as the use of topical anesthetics in the surgical patient is quite common.

Poster #8

NEW OPERATIVE APPROACH TO JEJUNO-JEJUNAL INTUSSUSCEPTION

JC Lawrence, BA; S Hosein MD; JB Wooldridge, MD FACS; WS Richardson, MD FACS
Presenter: Jeffrey Lawrence BA
University of Queensland Medical School, Metairie, LA

Background: Laparoscopic management of jejuno-jejunal (JJ) intussusception is an accepted approach to JJ after gastric bypass for weight loss. Typically this occurs from distally through the JJ into biliopancreatic limb (BPL). We explored the operative technique of decreasing the size of the JJ anastomosis utilizing a laparoscopic linear stapler.

Objective: We attempted to see if our more conservative method of treatment would have the same effect as a reconstruction of the anastomosis.

Methods: Retrospective review of electronic medical record (EMR) data from 2015 for patients presenting of operatively managed cases of JJ intussusception identified by Current Procedural Technology (CPT) codes. All patients had intermittent abdominal pain and intussusception on abdominal computed tomography (CT) scans.

Results: 3 cases were identified. 2 were started laparoscopically and one was converted due to adhesions to the abdominal wall. One was started open (due to known adhesions). Operative approach was reduction of intussusception, linear stapling of the JJ along the prior staple line to reduce anastamotic size and tacking the BPL to the distal small bowel (only the last 2 patients). There were no complications and no morbidities. Follow up visits at 2 weeks, 1 month, and 1 year confirmed no recurrent intussusceptions and abdominal pain related to incidences of intussusception was resolved.

Conclusion: Laparoscopic approach to JJ intussusceptions is not always possible. Complete redo of JJ anastamosis may not be necessary and simple partial division of the JJ anastamosis with or without tacking of the distal limb to the biliopancreatic limb may decrease complication rates.

Poster #9

ASSESSMENT OF STANDARDS IN THE USE OF FNA FOR THYROID NODULES AT A SINGLE UNIVERSITY HEALTH CARE SYSTEM

Ronald Mowad MD, principal author and presenter
Forrest Dean Griffen MD, faculty mentor
Anvesh Kompelli, Elizabeth Guarisco, Lance Alvin: research assistants/co-authors
Presenter: Ronald Mowad MD
LSUHSC Shreveport, Shreveport, La

Background: According to The Bethesda System for Reporting Thyroid Cytology (TBSRTC), there are 6 main categories of thyroid nodule FNA ranging from benign to malignant. Each result has an expected percentage of malignancy along with standard recommendations to guide workup and treatment. Observations have been made within our institution that certain FNA categories may be over diagnosed. Also, certain recommendations suggested by the Bethesda System on these criteria may not be routinely followed. Prompted by these concerns, this study was undertaken to retrospectively investigate the diagnostic workup and subsequent treatment of dominant thyroid nodules at LSU Health Shreveport between 1/1/2011 and 12/31/2016.

Objective: Our objective is to measure the quality of care for dominant thyroid nodules at LSU Health Shreveport by comparing our data to benchmark practices.

Methods: As part of an IRB-approved quality assurance program, we evaluated 1683 patients with thyroid nodules accrued between 1/1/2011 and 12/31/2016, 780 of whom had FNA performed and met criteria for the study (patients removed for the following exclusion criteria: age <18, prisoners, mentally retarded patients, incomplete data). We classified them based on the 6 FNA categories within TBSRTC guidelines. We then followed the next step as observation, surgery, or repeat FNA as well as follow up pathology. Chi square analysis was used to compare our sample data to national data based on large benchmark studies as a marker for standards of care.

Results: Analysis of the data showed the following rates of respective categories: Benign 62%, Nondiagnostic 7%, Follicular Neoplasm 6%, Atypia of Undetermined Significance 21%, Suspicious for malignancy 1%, Malignant 3%. These percentages were compared to the Bethesda benchmarks which had expected values of 60%, 15%, 6-11%, 7%, 2-8%, 3-7% respectively. Nondiagnostic and AUS/FLUS diagnoses were repeated 28% and 13% respectively, whereas TBSRTC guidelines recommend repeating FNA in all cases in these diagnostic categories. Malignancy rate from surgical pathology was 23% as compared to benchmark rates of 33.8%.

Conclusion: We noted several trends in our data. For one, repeat FNA was underutilized, resulting in higher than expected rates of benign surgical pathology. When FNA was appropriately repeated, pathology was often benign and these patients were spared surgery. We also noted high rates of AUS/FLUS, most of which were operated on resulting in lower than expected rate of malignancy.

Poster #10

SUCCESSFUL LYMPHANGIOTHERAPY FOR CHYLE LEAK POST LAPAROSCOPIC DONOR NEPHRECTOMY

Tillery RL, Scheller A, Buell JF, Caridi J, Ezell MB, Paramesh AS
Presenter: Robin Tillery MD
Tulane University School of Medicine, New Orleans, LA

Background: Chyle leakage is a rare complication after laparoscopic donor nephrectomy. Treatment of this is not well described and includes prolonged conservative management (including TPN) and invasive surgical therapy.

Objective: We describe a report of our first instance of this complication treated with a novel modality, with a review of the literature.

Methods: A 54 year old female underwent a hand-assisted laparoscopic donor nephrectomy for her husband's transplant. After an apparently uncomplicated surgery, she returned two weeks later with abdominal distension, inabilty to eat and pain. Imaging showed massive ascites; a tap showed high lymphocyte and triglyceride counts suggestive of chyle. She was initally treated with abdominal tap with a low fat diet with medium chain triglyceride supplements. After two months of therapy, this did not prove successful. We reviewed our database of living donor nephrectomies and then performed a thorough review of the literature to plan the best treatment modality for our patient

Results: Between 2002 through 2016, our center had performed over 500 laparoscopic donor nephrectomies, and this was the first instance of this complication. The patient underwent a lymphoscintigram which confirmed a large lymph leak at the nephrectomy bed. The pt subsequently underwent a lymphangiogram with lipiodol injection, with the intent of sealing up the lymph channel at the leakage point. She was also placed on a week of octreotide therapy. She did well immediately, and at 6 weeks post therapy she has no evidence of recurrent ascites and has the ability to eat a normal diet.

Conclusion: Chyle leak post donor nephrectomy is a rare complication. We describe a novel non-surgical treatment of this complication using lipiodol injection into the leaking lymph channel with good outcome.

Poster #11

CHRONICALLY INCARCERATED INTERNAL HERNIA AFTER ROUX-EN-Y GASTRIC BYPASS: A CASE STUDY.

SE Baker MD, WS Richardson MD
Presenter: Sarah Baker MD
Ochsner Clinic Foundation, New Orleans, LA

Background: Internal hernias (IH) are a known complication of Roux-En-Y gastric bypass (RYGB) for weight loss. Development of IH is more common following laparoscopic than open RYGB, and is reported in up to 5% of these patients if the Roux limb is retrocolic. Symptoms are frequently intermittent and may be impossible to detect without surgical intervention.
Internal hernias occur in 3 locations after RYBG: transverse mesocolon defect in retrocolic Roux-limb, defect of jejuno-jejunostomy (JJ), and retro-Roux defect (Peterson defect).

Objective: To discuss the major points involved in the proper evaluation and treatment of IH after RYGB.

Methods: Case Study
The patient is a 37-year-old female status post laparoscopic antecolic RYBG in September 2013 for morbid obesity, who was seen in clinic for a 6-month history of unintentional weight loss, nausea, and mid-abdomen postprandial abdominal pain. She had undergone recent diagnostic laparoscopy at an outside hospital 2 months prior to her presentation, where no abnormal findings were reportedly found. CT was performed due to worsening of her symptoms which demonstrated some mesenteric swirling concerning for possible IH, though without any signs of bowel obstruction. The patient was taken for diagnostic laparoscopy which revealed an incarcerated IH through the defect between the Roux limb and transverse mesentery with the bowel twisted around the Roux limb. This was detorsed with minimal adhesiolysis, and the defect, along with a separate JJ defect, was repaired with 2-0 permanent running suture.

Results: Discussion
With the increased number of gastric bypass surgeries being performed, general surgeons need to be familiar with the post-surgical anatomy of RYGB and its possible complications.
Acute small bowel obstruction or partial obstruction is a well-known complication related to internal hernia after RYGB which can result in infarcted bowel and major small bowel resection.
The presence of an internal hernia should be suspected in any patient with history of RYGB who presents with complaints of intermittent abdominal pain, often postprandial and may be associated with nausea, vomiting or unintentional weight loss.
Though CT often suggests the presence of an internal hernia, imaging studies have been reported as normal in up to 20% of patients later diagnosed with internal hernia. CT may show a mesenteric swirl, small bowel located in the LUQ or mostly on one side of the abdomen, or a dilated biliopancreatic limb and remnant stomach. Patients with uncontrollable pain should be operated on without waiting for a CT.

Conclusion: A high index of suspicion is needed in patients presenting with abdominal complaints after RYGB. Diagnostic laparoscopy may be needed to rule out IH even in patients with negative preoperative work up.
To ensure correct alignment of the bowel, it must be run from the cecum back. Then, look for defects in the typical locations. The correct way to evaluate for all 3 defects in RYGB patients is to run the bowel from the cecum to the JJ.
Whenever other abdominal procedures are done on post RYGB patients, these defects should be looked for and repaired.

Poster #12

TAILORED APPROACH TO GASTROPARESIS SIGNIFICANTLY IMPROVES SYMPTOMS

Arthur LE, Slattery LN, Richardson WS
Presenter: Lauren Arthur MD
Ochsner Clinic Foundation, New Orleans, LA

Background: Gastroparesis is difficult to treat and many patients do not report relief of symptoms with medical therapy alone. Several operative approaches have been described.

Objective: This study shows the results of our selective surgical approach for patients with gastroparesis. Patients were treated with either pyloroplasty (PP), gastric stimulator (GES), combination of both gastric stimulator and pyloroplasty (GSP), or sleeve gastre

Methods: This is a retrospective study of prospective data from our electronic medical record and data symptom sheet. All patients had a preoperative gastric emptying study showing gastroparesis, an esophagogastroduodenoscopy (EGD), and either a CT or an upper GI series with small bowel follow-through (UGISBF). All patients had pre- and post-operative symptom sheets where 7 symptoms were scored for severity and frequency on a scale of 0-4. The scores were analyzed by a professional statistician using paired sample t-test.

Results: 58 patients met inclusion criteria. 33 had GES, 7 PP, 16 GSP, and 2 SG. For patients in the GSP group the second procedure was performed if there was inadequate improvement with the first procedure. There was no mortality. The follow-up period was 6-316 weeks (mean 66.107, SD 69.42). GES significantly improved frequency and severity for all symptoms except frequency of bloating and postprandial fullness. PP significantly improved nausea and vomiting severity, frequency of nausea and early satiety. Symptom improvement for GSP was measured from after the first to after the second procedure. GSP significantly improved all but vomiting severity and frequency of early satiety, postprandial fullness and epigastric pain. (Table 1)

Conclusion: All procedures significantly improved symptoms, although numbers are small in the PP group. GES demonstrates more improvement than PP and should be considered first if not contraindications are present. If PP or GES alone do not adequately improve symptoms GSP is appropriate. In our practice gastrectomy was reserved as a last resort.

Poster #13

CASE REPORT: HEPATIC PARAGANGLIOMA 20 YEARS POST-TREATMENT FOR BILATERAL CAROTID BODY TUMORS

M Wright, J Seal
Presenter: Matthew Wright MPH
Ochsner Clinic Foundation, New , LA

Background: Paragangliomas (PGs) represent a broad class of tumors arising from neuroendocrine cells, the most common being pheochromocytomas of the adrenal glands. Less commonly, paragangliomas can arise from the parasympathetic system, most commonly carotid body tumors. Primary and metastatic paragangioloma of the liver is extremely rare, but is an important consideration in the differential diagnosis of liver mass in patients with a history of paraganglioma.

Objective: To present literature review and case report of a primary paraganglioma of the liver.

Methods: Case presentation and literature review.

Results: 57 year old man presents with several month history of intermittent fevers, malaise, and abdominal pain. His past medical history is significant for bilateral carotid body tumors 20 years prior to presentation that were treated with resection (right) and radiation (left) due to injury to recurrent laryngeal nerve. Genetic evaluation performed at that time was negative for familial syndromes associated with PG. A CT scan performed as part of an infectious workup revealed a 12 cm x 9 cm solitary mass in the right lobe of the liver. A metastatic work-up including colonoscopy, AFP, CA 19-9 and imaging was normal except for a bone lesion in T12 that was biopsy negative for malignancy. Based on the size of the mass, symptoms and non-specific imaging characteristics, we proceeded with anatomic right hepatectomy. Explant pathology revealed variable size cells arranged in nests with clear demarcation and negative margin with surrounding normal parenchyma. Immunohistochemistry was consistent with paraganglioma. PG naturally exhibit morphologic variablitiy and atypia making the biologic potential difficult to predict based on histology alone. In this case, it remains unclear if the tumor was a metastasis or primary liver paraganglioma.

Conclusion: Primary or metastatic paragangliomas to the liver are rare, but may be an important consideration in patients with a personal or strong family history of paraganglioma. Their metastatic potential can be difficult to predict and surgical management is indicated when anatomically feasible.