

Abstracts

Podium: Endocrine Surgery

Monday, June 8 @ 13:30-15:30

Using First Recurrence as an Outcome in the Assessment of Treatment Effectiveness for Patients with Lower Risk Differentiated Thyroid Cancer – S. Hall, Kingston, ON, J. Irish, Toronto, ON, P. Groome, Kingston, ON

1. The attendee will understand the prognostic factors and risk strata for recurrence
2. The attendee will learn that relapse is not related to extent of treatment
3. The attendee will appreciate that survival after relapse is excellent.

Background: Understanding the effectiveness of the various treatment options for patients with differentiated thyroid cancer can be difficult due to the excellent survival of most patients. Using first recurrence is a common non-survival outcome. **Method:** a population-based study of 2444 patients with differentiated thyroid cancer \leq 4 cm from Ontario between 1990 and 2000 with follow-up to 2012. Patients were identified in the Ontario Cancer Registry, their pathology reports were abstracted and they were linked to administrative data for demographics, subsequent treatments and outcomes. This study examines the outcomes after recurrence, prognostic factors for recurrence, rates of recurrence across the different geographic regions with different treatments and the accuracy of current risk strata classifications. **Results:** 453/2444 (18.5%) patients were identified with a recurrence. The 10 yr disease specific survival rate after recurrence was 83.3%. The predictors of recurrence included age > 60 yrs, male, multiple foci, extrathyroid spread, positive cervical nodes and vascular invasion. There was no significant difference in the rates of recurrence between regions with higher use of total thyroidectomy and RAI compared to regions with less extensive treatments. The accuracy of the various recurrence risk strata will be presented.

Rate of Level VI Lymph Node Positivity in Multifocal Papillary Thyroid Cancer – A. Al Afif, B.A. Williams, M.H. Rigby, M. J. Bullock, S. M. Taylor, J. Trites, R. Hart, Halifax, NS

Learning Objectives

1. To highlight the association between level VI lymph node metastasis and multifocal papillary thyroid cancer.
2. To underscore the importance of elective level VI neck dissection in known or suspected multifocal papillary thyroid carcinoma.
3. To demonstrate the correlation between lymph node metastases and both lympho-vascular invasion and extra-thyroidal extension in papillary thyroid carcinoma.

OBJECTIVES – Papillary thyroid cancer (PTC) is the most common thyroid malignancy, with a strong predilection for lymph node metastasis. Few studies have evaluated lymph node metastasis in multifocal PTC. This retrospective analysis evaluated the rate of level VI lymph node positivity in all variants of multifocal PTC, as compared with unifocal disease, in order to better inform patient management. **METHODS** – Patients with PTC who underwent total or hemi-thyroidectomy plus level VI lymph node dissection at our institution, between January 2008-June 2014, were included (total=227). We recorded the number and laterality of PTC foci, lympho-vascular invasion (LVI), extra-thyroidal extension (ETE) and positive/total number of level VI lymph nodes. Fisher exact test was used to determine univariate associations, and multivariate analysis was done by logistical regression. **RESULTS** – There was an association between the number of PTC foci and level VI node positivity ($p < 0.001$), with an odds ratio of 1.088 with each additional focus ($p < 0.018$). The risk of level VI node positivity in the presence of 1-2 foci was only 19%, with no appreciable difference between 1 and 2 foci. The risk increased in the presence of 3-9 foci (37.5%), and 10 or more foci (88%). Level VI node positivity was associated with ETE ($p < 0.001$), LVI ($p < 0.001$), but not bilateral multifocality ($p = 0.298$). **CONCLUSIONS** – There is a significant association between multifocal PTC and level VI lymph node positivity, increasing proportionally with the number of foci. Importantly, these data highlight a potential need for level VI node dissection in the management of multifocal PTC.

Preoperative Thyroglobulin Antibody: Can It Be a Useful Adjunct to the McGill Thyroid Nodule Score+ for Well-Differentiated Thyroid Cancer? – S. Hosseini, F. Zawawi, V.-I. Forest, A. Mlynarek, M. Hier, R. J. Payne, Richard, Montreal, QC

Learning Objectives

1. During this session, the audience will develop a better understanding of the role of thyroglobulin antibodies as a risk factor for well-differentiated thyroid cancer and its use in preoperative risk assessment.

Background/Objective: The McGill Thyroid Nodule Score Plus (MTNS+) is a scoring system used in preoperative assessment for well-differentiated thyroid cancer. It comprises 23 known risk factors for thyroid cancer and attributes a percentage risk that the nodule is malignant. We evaluated whether preoperative thyroglobulin antibody (TgAb) levels improve the prognostic significance of the MTNS+. **Method:** A retrospective review of 391 patients who underwent thyroidectomy in three McGill University affiliated hospitals between January 2012 and 2014 was conducted. Demographic data, TgAb levels, and final histopathology were recorded. MTNS+ scores were calculated. Patients were divided in six groups following a 2-step classification. They were first grouped by MTNS+ scores: high MTNS+ (≥ 12), intermediate MTNS+ (7-11) or low MTNS+ (≤ 6). They were then further subdivided in a positive (≥ 30 IU/mL) or a low/negative (< 30 IU/mL) TgAb group. **Results:** Malignancy rates were calculated for each of the six groups. In patients with high MTNS+ (average=16), the rate of malignancy was 83% in the TgAb negative group vs. 100% in the TgAb positive group ($p=0.056$). The risk of cancer in patients with positive TgAb and an average MTNS+ of 16 was hence increased from 75% to $>95\%$ compared to the original MTNS+ percentage risk. In the intermediate and low MTNS+ groups, the rate of malignancy was 42% vs. 50% ($p=0.50$) and 23% vs. 46% ($p=0.14$) respectively. **Conclusion:** TgAb is a valuable adjunct to MTNS+ that could potentially increase the specificity especially in patients with high MTNS+ score.

A Canadian Centre's Experience with the Bethesda System for Reporting Thyroid Cytopathology – E. Kay-Rivest, V.-I. Forest, L. Rochon, A. Florea, T. Michael, J. Wang, A. Mlynarek, R. Payne, Montreal, QC

Learning Objectives

1. Learn about the evolution of residency match success to Otolaryngology - Head and Neck Surgery (OTL-HNS) programs in Canada over the past 15 years.
2. Compare number of students successfully matching to OTL-HNS residency programs to statistics from other surgical disciplines.

Objectives: The competitiveness of a discipline impacts the admissions process for both the applicants and the residency training programs. The aims of this study were (1) to examine the evolution of successful matching of medical students applying to Otolaryngology – Head and Neck Surgery (OTL-HNS) residency programs across Canada, and (2) to compare these figures to other surgical disciplines. **Method:** Information (such as total number of applicants, and matching statistics) from the Canadian Residency Matching Service (CaRMS) between 1999 and 2014 were obtained and descriptive analysis was performed. Competitiveness was defined as the percentage of medical students matching to their first choice of surgical discipline. **Results:** The average number of students applying to OTL-HNS in Canada over the past 15 years was 46 (range: 23 to 62 applicants), with an upward trend since 2006 and the highest number of applicants in 2011. The most competitive year was 2003, with only 48% of students matching to OTL-HNS as their first choice specialty. The least competitive year was 2008, when 80% of students matched to OTL-HNS as first choice. Among the 10 surgical disciplines, OTL-HNS has consistently ranked between the second and the fifth most competitive discipline over 15 years. **Conclusion:** The number of applicants to OTL-HNS residency programs has increased steadily over the past nine years. While OTL-HNS has consistently remained among the top 5 most competitive surgical disciplines over 15 years, between 48-88% of applicants nevertheless match in OTL HNS.

Highly Effective Agents Identified in Genetically Characterized Anaplastic Thyroid Cancer Cell Lines - N. Pinto, M. Black, J. Yoo, D. MacNeil, K. Fung, London, ON, A. Datto, Toronto, ON, J. Barrett, A. Nichols, London, ON

Learning Objectives

1. To understand the genetic landscape of anaplastic thyroid cancer.
2. To learn how high-throughput drug screening can identify potent anti-cancer agents using genetically characterized cell lines.
3. To understand how correlating genomic findings with drug response in anaplastic thyroid cancer can lead to personalized therapy.

Introduction: Outcomes in anaplastic thyroid cancer (ATC) remain dismal with a median survival of about 2 months. New treatments are necessary to improve patient survival in this aggressive cancer. **Objectives** Identify highly effective drugs that can be used in the treatment of ATC using high-throughput drug screening with a large panel of kinase inhibitors. **Method:** High-throughput robotic screening of 13 genetically characterized ATC cell lines was carried out over a 6-dose range using 320 kinase inhibitors. Dose response curves were generated and drugs with high potency were identified. **Results** With the use of this 320-drug library on the 13 genetically characterized ATC cell lines, we identified highly effective agents with submicromolar mean inhibitory concentrations targeting the EGFR, mTOR and PI3-kinase. Several drugs with activity against multiple kinases were also found to be highly potent. Three out of four BRAF mutant cell lines were highly sensitive ($IC_{50} < 10 \mu M$), compared with one of nine WT-BRAF cell lines ($p=0.05$). **Conclusion:** With the use of high-throughput drug screening, we have identified a multitude of highly effective agents with the potential to improve outcomes for those suffering from ATC. Activating BRAF mutations are a biomarker of response to BRAF inhibition.

The Use of the Afirma® Gene Expression Classifier Test in Two Canadian Centres – E. Kay-Rivest, Montreal, QC, J. Tibbo, St. John's, NL, S. Bouhabel, R. Leboeuf, M. Tamilia, V.-I. Forest, Montreal, QC, L. Savoury, St. John's, NL, R. Payne, Montreal, QC

Learning Objectives

1. Present the experiences of two Canadian institutions with the Afirma gene expression classifier test for evaluating thyroid nodules.
2. Identify number of unnecessary thyroidectomies avoided with this technology.
3. Understand the appropriate management of results that return as "suspicious".

Objective: To present the experiences of two Canadian centres with the Afirma gene expression classifier (GEC) test. **Methods:** A retrospective study was performed using data from two Canadian cities, Montréal, Québec and St. John's, Newfoundland involving patients who underwent the Afirma GEC test for indeterminate thyroid nodules. The Afirma GEC samples were collected from the thyroid nodule under ultrasound guidance and then sent immediately to the United States for testing. **Results:** A total of 159 Afirma GEC tests were performed, 82 in Montréal and 77 in St. John's. 47 of the 82 (57%) nodules from Montréal, and 27 of the 77 (35%) from St. John's had a benign result on the Afirma GEC test and did not undergo surgery. Between the two centres, a total of 73 out of the 159 tests returned as suspicious and 71 patients underwent surgery. Of these, 45% (14 patients in Montréal and 18 patients in St. John's) had malignant final pathology. **Conclusion:** Of the nodules at both Canadian centers that were tested with the Afirma GEC test, 46.5% were found to be benign using the Afirma GEC technique. Among patients categorized as suspicious by the Afirma GEC that underwent surgery, 41% and 48% were found to be malignant in Montreal and St-John's respectively.

Are Winter and Summer Rates of Post-Thyroidectomy Hypocalcemia Different? A Montreal-Based Cohort Study – M. Mascarella, M. Roskies, V.-I. Forest, M. Tamilia, Hier, A. Mlynarek, R. Payne, Montreal, QC

Learning Objectives

1. Appreciate the seasonal variation of postoperative hypocalcemia in patients undergoing thyroidectomy.
2. Identify the months with the highest/lowest rates of postoperative hypocalcemia.
3. Evaluate potential causes for the variation in postoperative hypocalcemia in the winter and summer.

OBJECTIVES: To determine whether the rate of postoperative hypocalcemia in patients undergoing thyroidectomy in Montreal is different in the winter months than the summer months. **METHODS:** We performed a retrospective review of 810 patients undergoing thyroidectomy at the McGill University Teaching

Hospitals. Patients undergoing total or completion thyroidectomy were included in the study. Patients undergoing hemi-thyroidectomy, subtotal thyroidectomy or planned concurrent parathyroidectomy were excluded. Parathyroid hormone (PTH) and serum corrected calcium were recorded according to the McGill post-thyroidectomy protocol. Hypocalcemia was defined as a corrected calcium level $<1.90\text{mmol/L}$. **RESULTS:** Postoperative hypocalcemia occurred most frequently during February, with an average rate of 11.0% (10/76), as compared to 0% (0/63) for those operated in August ($p<0.01$). Moreover, a seasonal variation in postoperative hypocalcemia was noted with average winter, spring, summer and autumn rates being 13.9%, 5.6%, 1.5% and 3.6%, respectively ($p<0.01$). **CONCLUSION:** In this study, patients undergoing thyroidectomy during the winter months, specifically in February, were most likely to develop postoperative hypocalcemia.