Somatic BRCA2 mutation in Pancreatic Cancer: A Case Report and Literature Review

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Background and Objectives: Pancreatic ductal adenocarcinoma (PDAC) remains one of the most lethal malignancies, with limited treatment options for patients presenting with unresectable disease. Identification of BRCA1/2 mutations has important therapeutic implications, as homologous recombination-deficient tumors may demonstrate increased sensitivity to platinum-based chemotherapy and PARP inhibition. We present a case of unresectable PDAC with a somatic BRCA2 mutation despite negative germline testing and review the literature regarding the clinical significance of tumor genomic profiling.

Methods: A retrospective review of the patient's clinical presentation, diagnostic investigations, treatment course, and outcome was performed. A narrative review of the published literature was undertaken to examine the prevalence and therapeutic implications of somatic versus germline BRCA mutations in PDAC and the role of tumor next-generation sequencing (NGS).

Results: A 60-year-old woman with previous ovarian and breast cancers presented with abdominal pain, weight loss, and anorexia. Imaging demonstrated a locally advanced pancreatic body mass with major vascular encasement, rendering the tumor unresectable. Endoscopic ultrasound-guided biopsy confirmed pancreatic adenocarcinoma. Given her oncologic history, platinum-based FOLFIRINOX chemotherapy was initiated. Tumor NGS identified a pathogenic somatic BRCA2 mutation, while germline testing for BRCA1, BRCA2, and PALB2 was negative. Subsequent NGS of archived breast tumor tissue did not identify BRCA1 or BRCA2 mutations.The patient completed 17 cycles of FOLFIRINOX followed by 9 cycles of cisplatin and gemcitabine after persistent unresectability. Although surgical resection was not achieved, disease remained stable for an extended period, and the patient survived 23 months following diagnosis.

Discussion: This case highlights the clinical importance of distinguishing somatic from germline BRCA mutations in PDAC and demonstrates how tumor genomic profiling can identify actionable alterations despite negative germline testing. BRCA1/2 alterations occur in approximately 5–7% of PDACs, although somatic mutations are considerably less common than germline variants. Emerging evidence suggests that both somatic and germline BRCA mutations may predict responsiveness to platinum-based chemotherapy and PARP inhibitors, and have demonstrated benefit in selected patients with BRCA-mutated disease.

Conclusions: Tumor NGS can identify clinically actionable BRCA mutations that may influence treatment selection despite negative germline testing. This case supports the growing role of comprehensive molecular profiling in unresectable PDAC and underscores the importance of integrating tumor sequencing into contemporary management strategies.

ECMO Retrieval Program: Barriers and Facilitators to Implementation

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Background and Objectives: Acute respiratory failure (ARF) is among the most common causes of admission and death in intensive care unit (ICU), and patients often require invasive mechanical ventilation. While some patients improve with mechanical ventilation alone, others, especially those suffering the most severe forms, including acute respiratory distress syndrome (ARDS), can continue to worsen despite standard medical therapy and mechanical ventilation. For those patients who worsen, or in those patients requiring ventilation parameters that are in themselves harmful, extracorporeal membrane oxygenation (ECMO) offers an alternative approach to managing refractory respiratory failure by providing a means of continuously oxygenating blood and scrubbing it of CO_2 outside of the body. ECMO is complex and costly, and must be conducted in centers with appropriate experience, frequency of exposure, necessary supplies and education to ensure it is done safely and effectively. ECMO retrieval programs enable patients who are too unstable for conventional transport to be cannulated and stabilized at the referring center, before being transported on ECMO to a tertiary care facility with ECMO expertise for ongoing management. The objective of this research study was to identify the barriers and facilitators to implementing an ECMO retrieval program in Nova Scotia.

Methods: This is a qualitative focus group study. Participants were recruited via email and word of mouth. Five focus groups were conducted, each including different professions involved or to be involved in ECMO retrieval (n=2 cannulators, n=2 referral site health care professionals, n=3 transport team, n=5 ECMO center intensivists, and n=4 pediatric ECMO retrieval team members). Focus group data were recorded and professionally transcribed. Data collection and analysis were guided by the Theoretical Domains Framework (TDF). Inductive analysis was used to explore key themes.

Results: We identified four major themes: implementation logistics, confidence and emotional preparedness, personnel, and educational needs. Key areas of focus for participants were space availability within the transport vehicle, professional confidence, debriefing needs, equipment availability, and need to gain experience.

Discussion: Some participants expressed that they preferred straight forward procedural based debriefing, whereas others preferred debriefs focused on the emotional toll of ECMO retrieval. Many participants had existing knowledge/experience with ECMO retrieval or ECMO in general through previous training, however participants still expressed the need for further knowledge and skill development through exposure, presentations, and simulations. Some of the biggest concerns brought about by participants were logistical issues such as space constraints, weather limitations, and financial restrictions. Intensivists expressed concerns when having to rely on information from the referral site, especially when required to

make the decision to cannulate without "laying eyes" on the patient themselves.

Conclusions: The results of the study will be used to inform the creation of an ECMO Retrieval Program. Resources and training will be given to staff members to facilitate program implementation.

Keywords: ECMO; VVECMO; transport; retrieval; critical care; ECLS

Thymic Neoplasm Treatment and Presentation in Nova Scotia

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Background and Objectives: Thymic neoplasms, including thymomas and thymic carcinomas, are rare anterior mediastinal malignancies with variable clinical behaviour and prognosis. Thymomas are generally more indolent, whereas thymic carcinomas are more aggressive and associated with poorer outcomes. This study evaluates treatment outcomes and prognostic factors associated with survival, recurrence, and disease progression among patients treated at the Nova Scotia Cancer Centre (NSCC) from 1979 to 2016. A secondary objective is to compare findings with a previous provincial study completed in 2009 to assess changes in management and outcomes over time.

Methods: A retrospective chart review was conducted of patients diagnosed with thymoma or thymic carcinoma and treated at the NSCC between 1979 and 2016. Demographic, clinical, pathological, and treatment-related data were collected, including age, histology, stage, tumour size, margin status, and resectability. Treatment modalities included surgery, radiotherapy, chemotherapy, and multimodal approaches. Outcomes assessed included overall survival, recurrence, disease progression, and, where available, cause of death.

Results: From the initial preliminary results, there were 136 patients found to have been eligible and involved in the statistical analysis. These patients were broken down into the following subgroups: 89% thymoma, 10% thymic carcinoma; predominantly early-stage, with 93% being surgically resected.When comparing the two subtypes of neoplasms, patients with thymic carcinomas were older and had more frequent lymphovascular invasion, metastasis, and recurrence. They were also more likely to receive radiation and chemotherapy as their therapy and had a significantly shorter follow-up period. This differs from patients with thymomas who were generally younger and had less aggressive disease. They had lower rates of lymphovascular invasion, metastasis, and recurrence. Treatment more commonly involved surgery alone or multimodal therapy.

Conclusions: From the initial findings, tumour size, capsular invasion, margin involvement, and death from any cause did not differ significantly between the groups.Both radiation oncology and pathology records were used as a combined dataset, allowing for more complete patient identification and characterization of the clinical data. The long study period from 1979 to 2016 also allowed for the capture of thymic neoplasm cases and treatment patterns over several decades. One key limitation of this research was incomplete historical data, as older records often had missing or unavailable clinical information. Additionally, the small sample size, which directly reflects the rarity of thymic neoplasms, limited the statistical analysis and the ability to draw definitive conclusions. Future studies should examine how histologic subtype and treatment modality relate to survival and recurrence, as well as identify clinical and pathological prognostic factors associated with outcomes. By answering these questions, the data could ultimately help inform treatment strategies and improve care for patients with thymic neoplasms. Multivariate and survival analyses are ongoing and will be used to provide additional information into key variables such as treatment outcomes and prognostic factors associated with these neoplasms.

Keywords: thymic neoplasms; thymoma; thymic carcinoma

Sex difference and non-hepatic surgical outcomes in Nova Scotian adults with liver cirrhosis

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Background and Objectives: Liver cirrhosis is a complex chronic condition that is associated with high rates of adverse health events, particularly with respect to surgical outcomes. This study aimed to underscore certain procedural and demographic conditions that predispose patients with cirrhosis to harmful perioperative outcomes. This population cohort study examined non-hepatic surgical outcomes in Nova Scotians with cirrhosis compared to those without cirrhosis with the purpose of optimizing perioperative conditions for the affected population. Primary outcomes included hospital length of stay (LOS), in-hospital mortality and post-operative complication rates, while also considering differences between sex and surgical type. Additionally, the study aimed to identify current barriers and inequities in access to surgical care in Nova Scotia.

Methods: We conducted a cohort analysis of non-hepatic surgeries in Nova Scotia from 2010 to 2022. Data extraction and analysis were performed by HDNS. Inclusion criteria were adults over 18 with or without cirrhosis who underwent one of the 5 types of surgeries within NS: open or laparoscopic surgical procedures were cholecystectomy, partial or total colectomy, hernia repair, large joint surgery, and bariatric surgery. Median follow-up was 90 days (IQR 90.00-99.00).

Results: A total of 42228 patients were included, 1630 with cirrhosis (44.0% female, mean age at time of surgery 62.0 yr (SD 14.57) and 40598 without (52.0% female, mean age 58.4 yr SD 16.84 yr). Cirrhosis was associated with a greater hazard of post-operative complications (HR 2.18, 95% CI 1.95 - 2.43; $p<0.0001$), prolonged LOS (HR for discharge 0.427, 95% CI 0.403 - 0.453; $p<0.0001$), and all-cause mortality at 90 days (HR 3.44, 95% CI 2.85 - 4.15, $p<0.0001$). Cirrhosis had no impact on in-hospital mortality (HR 1.179, $p = 0.84$). In the cirrhosis group, HR for post-operative complications was 3.57 (95% CI 3.00 - 4.23; $p<0.0001$) for hernia repair, while HR for cholecystectomy was 1.44 (95% CI 1.19 - 1.73; $p = 0.0001$).