of LMD is largely devoid of CD3+ T cells, but is enriched for immune suppression and innate immunity.

LMD-21. HEADACHE IMPROVEMENT PREDICTS SURVIVAL AFTER CSF DIVERSION IN LEPTOMENINGEAL DISEASE

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BACKGROUND: Leptomeningeal carcinomatosis (LMD) is a seeding of the leptomeninges by malignant cells. Clinical, treatment and patient-related factors have been described in patients with LMD. Current data are limited by small sample size, particularly in patients undergoing ventriculoperitoneal shunting (VPS) as part of the treatment regimen. OBJECTIVE: This study presents the largest cohort of LMD patients in the literature undergoing cerebrospinal fluid (CSF) diversion and seeks to identify prognostic factors related to survival. METHODS: A retrospective review of patients diagnosed with LMD between 2010 and 2016 at a quaternary referral center was performed. Cox proportional hazards modeling was utilized to identify variables associated with improved overall survival from LMD diagnosis. Overall survival was depicted using Kaplan-Meier methodology. Competing risk methodology was used to identify variables associated with VPS, considering death as a competing event. RESULTS: Of the 314 patients identified, 112 underwent VPS placement. The median overall survival from LMD diagnosis was 3.9 months (95% CI: 3.2–4.4). The presence of headaches, increased opening pressure, and gait difficulty increased the likelihood of VPS placement (all $p<0.05$). VPS, older age, lower Karnofsky Performance Status (KPS), higher opening pressure and CSF nucleated cell count (NCC) increased the risk of death (all $p<0.05$). Patients reporting headache improvement after VPS had better survival ($p<0.05$). CONCLUSIONS: Headache, increased opening pressure and gait instability were associated with higher rate of VPS placement and may portend more aggressive disease. Headache improvement following VPS is a favorable prognostic sign, suggesting survival advantage for patients with hydrocephalus undergoing VPS. Age, KPS, VPS, opening pressure, CSF NCC, concomitant visceral metastases and histology-specific molecular profile impact survival.

LMD-22. CLINICOPATHOLOGICAL SPECTRUM OF LEPTOMENINGEAL METASTASES: A 3 YEAR RETROSPECTIVE STUDY

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OBJECTIVES: Cytological examination of cerebrospinal fluid is a widely used cost effective, simple procedure and a reliable routine diagnostic test. CSF cytology helps in detection of inflammatory diseases of the CNS, diagnosis of subarachnoid haemorrhage and the identification of malignant cells in metastatic or rarely primary CNS malignancies.Leptomeningeal metastases (LM) is estimated to occur in 5% of all patients with cancer. It has a higher propensity to occur in solid tumours compared to haematological malignancies.In view of poor prognosis, early diagnosis may aid in appropriate tumour staging and aggressive therapeutic intervention. METHODS: All the samples of CSF received in the Department of Laboratory for cytological examination and reported as 'positive for malignant cells' during the year January 2018 to December 2020were included in the study. All the cases were routinely evaluated on Neubauer's chamber, direct smear and a cytospin preparation stained using MGG stain. The clinical records and any further ancillary testing performed were retrospectively analysed. RESULTS: 87cases with LM were identified over 3 year duration. Mean age of presentation was 43 years. Metastatic solid malignancies (56%) had a higher incidence of leptomeningeal metastases compared to haematolymphoid malignancies (40%) and CNS medulloblastomas(2%). Most common solid tumour with involvement of CSF was adenocarcinoma lung (51%) followed by breast carcinoma (37%). Of all the cases of adenocarcinoma lung with LM, EGFR mutant NSCLC were 40% while 8% showed ALK gene rearrangement. Amongst the haematological malignancies, acute leukaemia's constituted 67% of cases while systemic NHLs were 34%. Most of the cases (97%) presented with neurological symptoms during the course of treatment while 3 cases (3%) showed LM at the time of first presentation. CONCLUSIONS: With appropriate clinicoradiological correlation, CSF cytology remains the gold standard for identification of malignant cells in cases with already known primary tumour (leptomeningeal dissemination of the disease). In this study, clinical features of both solid and haematolymphoid malignancies were evaluated. The group of solid malignancies included adenocarcinomas lung, breast, gastrointestinal tract and renal cell carcinoma. With the availability of EGFR TKIs and ALK inhibitors, overall survival of the patients may be prolonged with therapeutic interventions despite limited CSF and CNS penetration of these drugs.

MEDICAL THERAPY (CHEMOTHERAPY AND IMMUNOTHERAPY)

THER-01. TARGETED THERAPY AND INTRACRANIAL METASTATIC DISEASE: A POPULATION-BASED RETROSPECTIVE COHORT STUDY

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BACKGROUND: Targeted therapies have been hypothesized to prolong survival in the management of patients with intracranial metastatic disease (IMD), but, paradoxically, to increase IMD incidence by improving systemic disease control and prolonging survival from the primary tumor. The real-world benefits of targeted therapy in management of patients with IMD are unclear, as clinical trials have excluded patients with IMD and lacked endpoints reporting intracranial outcomes. METHODS: This retrospective cohort study included all patients in Ontario, Canada, diagnosed with IMD from 2005 to 2018 with primary diagnoses of breast cancer, lung or bronchus cancer, or melanoma, and control patients matched by primary disease without IMD. Kaplan-Meier and multivariable Cox regression analyses were performed to compare overall survival (OS) between patient subcohorts divided by primary disease and stratified by targeted therapy receipt or IMD status. RESULTS: Post-IMD targeted therapy was associated with prolonged OS in patients with HER2-positive breast cancer (HR 0.41; 95% CI, 0.33–0.5), EGFR-positive lung cancer (HR 0.28; 95% CI, 0.23–0.34), and BRAF-positive melanoma (HR 0.2; 95% CI, 0.14–0.29), compared to those who did not receive post-IMD targeted therapy. Presence of IMD was associated with shorter OS in patients with metastatic HER2-positive breast cancer (HR 1.8; 95% CI, 1.56–2.08) and metastatic EGFR-positive lung cancer (HR 1.22; 95% CI, 1.08–1.39) but not metastatic BRAF-positive melanoma (HR 1.11; 95% CI, 0.77–1.61), compared to those without IMD. CONCLUSIONS: Our findings show that real-world use of targeted therapies was associated with prolonged OS in patients with IMD in the setting of HER2-positive breast cancer, EGFR-positive lung cancer, and BRAF-positive melanoma. Inclusion of patients with IMD in clinical trials and use of endpoints that interrogate IMD will be critical to determine the role of targeted therapies in the management of patients with IMD.

THER-02. PARP INHIBITOR TOLERABILITY AND IMPACT ON PROGRESSION-FREE SURVIVAL IN PATIENTS WITH HIGH-GRADE, OVARIAN CARCINOMA WITH BRAIN METASTASIS: A CASE-SERIES

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Brain metastases secondary to ovarian carcinoma is an uncommon but increasing phenomenon. PARP inhibitors (PARPi) are increasingly used as an adjunctive treatment in patients with central nervous system metastases (CNS). Historically brain metastases has a historically poor prognosis. Five women with a mean age of 60.4 ± 7.6 years were included. All had stage IIIC/IV ovarian cancer and diagnosed with brain metastases at recurrence. Three underwent resection for oligometastatic disease followed by post-operative stereotactic radiosurgery (SRS), one had SRS without surgery, and one patient underwent whole brain radiotherapy for multiple metastases. Pathology was confirmed in those who were resected. Two patients had evidence of systemic disease in addition to CNS spread. Three women were BRCA1/2 Positive. Following initial radiotherapy, one patient received adjuvant chemotherapy followed by olaparib maintenance, one received 13 cycles of bevacizumab/olaparib, followed by olaparib maintenance. A third patient was treated with olaparib/bevacizumab and two patients received olaparib monotherapy, both of whom continued on therapy. All received olaparib therapy during their treatment and all had minor dose modifications due to side effects. Mean survival from initial cancer diagnosis was 62.4 ± 20.4 months. Mean duration of PARPi therapy was 27.6 ± 16.8 months. Mean survival following CNS recurrence was 22.8 ± 12 months. One patient is disease-free, two patients are alive with stable disease, one patient is alive but off treatment secondary to progression, and one patient is deceased secondary to progression of her brain metastases after being on PARP therapy for 18 months. The cohort remained highly functional across the trajectory of their disease with ECOG scores of 1 (n=4) or 0 (n=1). The results of this single institution retro-