SAT0598 RHEUMATIC IMMUNE RELATED ADVERSE EVENTS ASSOCIATED WITH CANCER IMMUNOTHERAPY: A NATIONWIDE MULTI-CENTER CANADIAN COHORT FROM THE CANADIAN RESEARCH GROUP OF RHEUMATOLOGY IN IMMUNO-ONCOLOGY (CANRIO)

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Background: Immune checkpoint inhibitors (ICI) have revolutionized cancer therapy by harnessing the immune system to fight cancer. As the indications for ICI continue to expand, their success in advanced stage malignancies is tempered by the development of autoimmune toxicities, referred to as immune-related adverse events (irAE). Rheumatic irAE (Rh-irAE), particularly arthralgias and arthritis are common and optimal management remains unknown.
Objectives: The Canadian Research Group of Rheumatology in Immuno-Oncology (CanRIO) is an emerging network of Canadian rheumatologists with an interest in Rh-irAE secondary to ICI. We describe the clinical presentation and management of Rh-irAE associated with ICI in patients seen at 9 CanRIO sites.
Methods: Patients presenting with rheumatic symptoms associated with ICI therapy between 2013 and January 2019 at participating CanRIO sites were identified. Cases were stratified based on the presence or absence of pre-existing autoimmune disease (PAD). Standardized data were extracted by chart review. The data were pooled and analyzed descriptively.
Results: 118 patients without PAD who developed 140 Rh-irAE were identified, 59% were male with a mean age of 62 years. Common indications for ICI were melanoma (n=57, 48.3%), lung (n=30, 25.4%), and genitourinary cancer (n=19, 16.1%). ICI included nivolumab (n=30, 25.6%), pembrolizumab (n=38, 32.5%), ipilimumab (n=1, 0.9%), durvalumab (n=3, 2.6%), atezolizumab (n=4, 3.4%) or combination therapy (n=29, 24.8%). Common Rh-irAE included symmetric polyarthritis (n=45, 32%), arthralgias/myalgias or acute flare of osteoarthritis (n=20, 14.3%), polymyalgia rheumatica-like presentation (n=17, 12%), tenosynovitis/enthesitis (n=17, 12%), sicca syndrome (n=11, 7.9%) and myositis (n=9, 6.4%). 20 patients with PAD were identified, 70% of whom were in remission prior to starting ICI. 50% (n=10) had flares, 15% (n=3) developed a new Rh-IrAE and 20% (n=4) developed O-irAE.
53% experienced at least one other non-rheumatic irAE (O-irAE) (n=63). Mean time from first ICI exposure to onset of Rh-irAE was 6.8 months. In 65% ICI was held or discontinued (n=77). Despite this, 68.6% (n=81) had favorable tumor response, while 12% (n=14) had tumor progression. There were no deaths related to Rh-irAE.
The majority of patients without PAD had partial or complete response to mono or combination therapy with oral prednisone (n=77; maximum dose 60 mg/d), nonsteroidal anti-inflammatories (NSAID; n=52), intra-articular corticosteroids (n=29), hydroxychloroquine (n=26), methotrexate (n=17), or tumor necrosis factor alpha inhibitors (n=9).
Conclusion: This is the largest multi-centered cohort of Rh-irAE described to date. Seronegative inflammatory polyarthritis was the most common Rh-IrAE although a broad range of conditions were identified. The most common first-line treatment was systemic corticosteroids followed by NSAID and intra-articular steroid injections. Prednisone was effective, however higher doses were required. Disease-modifying antirheumatic drugs (DMARD) and biologic therapy were well tolerated and effective, with hydroxychloroquine being the most commonly used DMARD. Despite moderate to high doses of immunosuppression, the majority of patients had favorable tumor responses.
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SAT0599 EXPLORING HETEROGENEITY IN RHEUMATOID ARTHRITIS: OUTCOMES UP TO 4 YEARS OF FOLLOW-UP IN PATIENT CLUSTERS IDENTIFIED BY DATA-DRIVEN ANALYSIS OF THE BRASS REGISTRY

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Background: Patients with rheumatoid arthritis (RA) may share characteristics that relate to their future outcomes.
Objectives: To investigate clinical outcomes over a 4-year follow-up period in objectively identified RA patient clusters derived empirically via a data-driven approach using the BRASS registry.
Methods: Patient clusters were identified by principal components (PC) and cluster analysis of demographic, socio-economic, health and disease characteristics of patients on entry (baseline) into the BRASS registry. Patients in BRASS are followed in the clinic at least annually and are sent questionnaires at 6-month intervals. Mean score was calculated at 12- and 24-months follow-up as observed for Clinical Disease Activity Index (CDAI), Disease Activity Score 28-joint count C-reactive protein (DAS28-CRP), BRASS self-administered Rheumatoid Arthritis Disease Activity Index (RADAI), swollen and tender joint count (SJC and TJC), Multidimensional Health Assessment Questionnaire (MDHAQ), and Functional Status Mental Health Index (FSMHI). Time to first infection and to first RA medication change over 4 years was analysed via Kaplan-Meier curves.
Results: PC analysis of variables among 1443 patients recorded at entry into BRASS identified 41 PCs that capture the fundamental characteristics involved in RA. These PCs informed the identification of 5 novel patient clusters. Cluster 1 patients ("health low, RA uncontrolled, shorter RA duration") exhibited the greatest reduction in TJC. Cluster 2 patients ("health high, RA controlled, shorter RA duration") remained free of infection longer than other clusters. Cluster 3 patients ("health high, RA

Figure. (A) mean Clinical Disease Activity Index (CDAI), (B) mean Functional Status Mental Health Index (FSMHI), (C) time to first change in baseline conventional synthetic or biological disease-modifying antirheumatic drug in five objectively identified patient cluster phenotypes