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Title: Comparison of Clinical Features and Demographics Between MOGAD and NMOSD

Background: MOGAD and NMOSD are demyelinating disorders of the central nervous system with diverse demographics and clinical features. Their overlapping symptoms can complicate diagnosis, and the comparison of their features remains underexplored.

Objectives: To assess for clinically significant associations between MOG and NMO, to guide clinicians in the future.

Methods: A retrospective analysis of adult MOGAD (n=55) and NMO (n=49) patients was conducted using electronic health records. Clinical features, demographics, and imaging findings were compared, with a comparison of proportions to assess significant associations.

Results: Regarding demographic features, NMO patients compared to MOG patients had a lower proportion of diagnoses before 18 years old (n=2 vs n=10, 4.1% vs 18.2%, p=0.025) and had a lower proportion of males (n=5 vs n=23, 10.2% vs 41.8%, p<0.001). NMO patients compared to MOG patients also had a lower proportion of White patients (n=9 vs n=25, 18.4% vs 45.5%, p=0.003), but a higher proportion of Black patients (n=22 vs n=10, 44.9% vs 18.2%, p=0.003). Regarding clinical features, a lower proportion of NMO patients compared to MOG patients had optic nerve lesions at diagnosis (n=13 vs n=33, 32.5% vs 61.1%, p=0.006). However, NMO patients compared to MOG patients had greater proportions of neuropathic pain (n=36 vs n=25, 73.5% vs 45.5%, p=0.004), weakness (n=28 vs n=19, 57.1% vs 34.6%, p=0.021), and eye pain (n=11 vs n=19, 84.6% vs 34.6%, p=0.001). There were no significant differences in the prevalence of psychiatric symptoms between the two groups (p=0.425).

Conclusion: Demographic and clinical features differ significantly between NMO and MOG patients, with NMO patients exhibiting a lower proportion of early diagnoses, fewer males, and a greater proportion of Black individuals, while MOG patients show a greater proportion of White individuals. These findings are consistent with current literature, which suggests that NMO affects more females and individuals from diverse racial backgrounds, particularly Black patients. Clinically, NMO patients are more likely to experience neuropathic pain, weakness, and eye pain, aligning with known presentations of the disease, while MOG patients typically present with a higher frequency of optic nerve lesions. These findings are also in line with established clinical observations. These results emphasize the need to consider both demographics and clinical features in diagnosis and treatment.