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Abstract Title: African American patients with MS/NMOSD have more rapid B-cell repopulation than white patients following infusion of anti-CD20 B-cell depleting therapy

Press Release Title: Study: Black People May Respond Differently to Common MS Therapy than White People

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Objective: To characterize and compare B-cell repopulation kinetics following anti-CD20 infusion in African American (AA) and white (WA) patients with multiple sclerosis (MS) or neuromyelitis optica spectrum disorder (NMOSD).

Background: Anti-CD20 therapies are highly effective in MS/NMOSD. Repopulation of B-cell subsets following anti-CD20 treatment has not been studied in AA who tend to have more severe disease.

Design/Methods: Demographics, disease-related information, and anti-CD20 treatment history were retrospectively collected on patients with MS or NMOSD who receive care at NYU MS Care Center and had flow cytometry results after infusion of rituximab or ocrelizumab. B-cell subsets (CD19, CD20, lgD, CD27 cluster analysis) from the date closest to infusion were analyzed with flow cytometry (BD FACSCanto™ and FACSCanto™ II Cell Analyzers). B-cell repopulation was defined as any detectable number of CD19+ cells on flow cytometry.

Results: Of 168 patients (134 MS, 32 NMOSD), 50 (29.8%) had detectable B-cell repopulation with a median of 6.8 months following anti-CD20 infusion. The ratio of B-cell subsets (%CD19+ cells) in patients with B-cell repopulation was as follows: 80.3%(±24.9%) IgD+/CD27-; 11.6%(±21.5%) IgD-/CD27+; 6.2%(±13.4%) IgD-/CD27-; 1.8%(±1.4%) IgD+/CD27+. B-cell repopulation was observed in no patients (0/40) <4 months following anti-CD20 infusion; 18/79 patients (23%) between 4-6 months; and 25/41 (61%) between 6-12 months following infusion. There was no difference in the frequency of B-cell repopulation between AA (5/24; 20.8%) and WA (5/28; 17.9%; p=0.79) 4-6 months following infusion, while 6-12 months after infusion, AA had a significantly higher frequency of B-cell repopulation (16/21; 76.2%) compared to WA (4/12; 33.3%; p=0.02). There were no differences in B-cell subset ratios in repopulated samples between AA and WA patients.

Conclusions: AA with MS/NMOSD had more rapid B-cell repopulation at 6-12 months following anti-CD20 infusion compared to WA, but similar relative distribution of B-cell subsets. This finding may have implications for clinical management of MS/NMOSD in AA.

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