DECIDE: Daclizumab HYP Superior to IFN-β-1a for Brain Lesion Activity in RRMS

Written by Wayne Kuznar

Daclizumab high-yield process (HYP), an investigational humanized monoclonal antibody, binds to CD25, which modulates interleukin-2 receptor signaling [Gold R et al. *Lancet.* 2013], thereby decreasing the number of abnormally activated T cells and pro-inflammatory lymphoid tissue inducer cells, and expanding and activating CD56 bright natural killer cells.

John Rose, MD, University of Utah, Salt Lake City, Utah, USA, presented results from the DECIDE study [NCT01064401], which demonstrated that in patients with relapsing-remitting multiple sclerosis (RRMS), brain magnetic resonance imaging (MRI) lesion activity was lower with subcutaneous daclizumab HYP compared with interferon beta-1a (IFN-β-1a).

The DECIDE trial was a phase 3, global, randomized, double-blind multicenter study comparing daclizumab HYP with IFN-β-1a in 1841 patients with RRMS. Patients were randomized to either subcutaneous daclizumab HYP 150 mg every 4 weeks (n = 919) or intramuscular IFN-β-1a 30 µg once weekly for 96 to 144 weeks (n = 922). The annualized relapse rate, the primary end point of the study, has been shown to be 45% lower in the daclizumab HYP arm compared with the IFN-β-1a arm ($P < .0001$) [Kappos L et al. AAN 2015 (abstr S4.003)]. Dr Rose focused on the secondary and tertiary end point findings in the DECIDE trial, including the number of new and newly enlarging T2 hyperintense lesions over 96 weeks, the volume of both T1 hypointense lesions and T2 hyperintense lesions, the number of gadolinium-enhancing lesions, and the change in whole brain volume.

At baseline, the mean number of T2 hyperintense lesions was 49.2 in patients randomized to receive daclizumab HYP and 51.8 in those randomized to IFN-β-1a. The mean number of gadolinium-enhancing lesions was 2.0 and 2.3, respectively, and the mean number of T1 hypointense lesions was 31.8 and 33.9, respectively.

At weeks 24 and 96, the mean number of MRI-defined lesions was significantly lower in the daclizumab HYP arm than the IFN-β-1a arm ($P < .0001$).

MRI data showed that the number of new and newly emerging T2 hyperintense lesions was reduced by 44% at week 24 in patients assigned to daclizumab HYP vs IFN-β-1a ($P < .0001$), and by 54% at week 96 ($P < .0001$). Similarly, the number of new T1 hypointense lesions was reduced by 37% at week 24 and by 52% at week 96 ($P < .0001$) in the daclizumab HYP arm relative to IFN-β-1a. Compared with IFN-β-1a, daclizumab was associated with a 38% reduction ($P < .0001$) in the number of gadolinium-enhancing lesions at week 24 and a 65% reduction ($P < .0001$) at week 96.

The median reduction percentage from baseline in the volume of T2 hyperintense lesions was significantly greater in the group that received daclizumab HYP compared with those treated with IFN-β-1a at week 24 ($P = .0188$). However, although the median volume percentage of T2 hyperintense lesions was greater at week 96 than at baseline in both groups, this increase was significantly lower with daclizumab HYP compared with IFN-β-1a ($P < .0001$). Additionally, the median percentage increase from baseline in volume of T1 hypointense lesions was significantly lower in the daclizumab HYP arm vs IFN-β-1a arm at both weeks 24 and 96 ($P = .0003$ and $P < .0001$, respectively). Finally, daclizumab HYP was associated with significantly less brain volume loss from baseline to week 24 ($P < .03$) and week 24 to week 96 ($P < .0001$) compared with IFN-β-1a.

Dr Rose concluded that daclizumab HYP has the potential to offer a more effective treatment for RRMS than IFN-β-1a with a positive benefit/risk profile.