The association between hydroxyurea treatment and pain intensity, analgesic use, and utilization in ambulatory sickle cell anemia patients.

BACKGROUND: We compared daily pain, home analgesic use, and utilization among ambulatory adults in the randomized multicenter study of hydroxyurea in sickle cell anemia (MSH). We related the fetal hemoglobin (HbF) hydroxyurea response to these response variables.

METHODS: Patients rated their sickle cell pain intensity (0-9), use of analgesics, and visits for pain daily. Diaries were collected biweekly, and intensity was collapsed into single interval ratings. The interval proportions of days of analgesic use and medical visits for pain were also calculated. Group comparisons were made by intention to treat as well as by HbF change levels from baseline to 2 years of treatment (placebo and low, medium, high, or very high response).

RESULTS: A total of 134 (44.8%) enrollees completed 2 years of follow-up. Pain intensity correlated with analgesic use ($r = 0.83$, $P > 0.0001$) and utilization ($r = 0.50$, $P < 0.0001$). Pain intensity was lower for patients on hydroxyurea ($2.51 \pm 0.062$ vs $2.82 \pm 0.063$ placebo, $F(1270) = 11.65$, $P = 0.0007$). The difference, though small, appeared early and was sustained. Analgesic use and utilization were also slightly lower (analgesic use: $F(1270) = 11.97$, $P = 0.0006$; utilization: $F(1270) = 32.0$, $P < 0.0001$). Each was statistically significantly lower
among hydroxyurea patients with higher HbF treatment responses to hydroxyurea.

CONCLUSIONS: Hydroxyurea usage led to a small, statistically significant reduction in daily pain, analgesic use, and utilization in adults in MSH, corroborating previously shown larger reductions in crises and mortality. The degree of daily symptomatic reduction was related to the size of the HbF treatment response, further confirming HbF response as a useful laboratory correlate.

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