NCCN Acute Lymphoblastic Leukemia Panel

Re: Request for review of clinical data and recommendation for DEFITELIO® in the NCCN Clinical Practice Guidelines in Oncology® - Acute Lymphoblastic Leukemia (ALL)

On behalf of Jazz Pharmaceuticals, I respectfully request the NCCN Acute Lymphoblastic Leukemia Panel to review the enclosed FDA approved label1 and clinical studies2-6 in support of the inclusion of DEFITELIO® (defibrotide sodium [defibrotide]) as the treatment of hepatic veno-occlusive disease (VOD) in ALL.

FDA Clearance: DEFITELIO (defibrotide sodium) is indicated for the treatment of adult and pediatric patients with hepatic veno-occlusive disease (VOD), also known as sinusoidal obstruction syndrome (SOS), with renal or pulmonary dysfunction following hematopoietic stem-cell transplantation (HSCT).1

Suggested Changes: We respectfully ask the NCCN Panel to consider adding the following:

ALL-C 2 of 4 “Supportive Care”: New bullet

- Hepatic VOD is a rare but potentially life-threatening complication following hematopoietic stem cell transplant (HSCT) or chemotherapy without HSCT:
  - Defibrotide for treatment of patients who develop hepatic VOD.
  - Treatment with defibrotide has been shown to result in a 38% to 49% survival rate at 100 days after HSCT in patients with VOD with multi-organ dysfunction (MOD), compared with a historical control rate of 21% to 31%. In 488 patients with VOD without MOD post HSCT, from a large expanded access protocol, defibrotide therapy resulted in 69% survival at 100 days.
  - In patients who developed VOD post-chemotherapy without HSCT, defibrotide therapy resulted in 66% survival with MOD and 81% survival without MOD at 70 days post initiation of defibrotide.

Rationale Summary:
Defibrotide is the first and only FDA-approved therapy for treatment of hepatic VOD with renal or pulmonary dysfunction following HSCT,7 a rare and life-threatening liver complication that can occur following HSCT or chemotherapy. Although rare, hepatic VOD with multiorgan dysfunction is associated with a very high mortality rate of up to 80%.7 Use of defibrotide resulted in 38% to 49% survival at 100 days after HSCT in patients with MOD, in a wide variety of underlying malignancies, compared with a historical control rate of 21 to 31%.1-5 In 488 patients with VOD without MOD post HSCT from a large expanded access protocol, defibrotide therapy resulted in 69% survival at 100 days.5 Based on a posthoc analysis from a large expanded access protocol, in patients who developed VOD after a variety of chemotherapy regimens without HSCT (51% are ALL patients), use of defibrotide resulted in 74% survival at 70 days.8 Inclusion of defibrotide as a therapy can provide an effective option to patients affected by this frequently fatal condition.
Published Literature Support:
Defibrotide is not approved by the FDA for use in patients with hepatic with VOD without MOD following HSCT nor in patients who developed VOD post-chemotherapy without HSCT.

Post-HSCT
Defibrotide was studied in 2 prospective trials and an expanded access study in patients diagnosed with hepatic VOD after HSCT.\textsuperscript{3,5} In the phase 3 study,\textsuperscript{2} defibrotide was administered intravenously at 25 mg/kg daily in 4 divided doses, infused over 2 hours every 6 hours for a minimum of 21 days. The study involved a total of 134 patients; 16.7% of the defibrotide-treated patients and 21.9% of patients in the control group had ALL as the underlying disease. Defibrotide treatment resulted in 38.2% survival at day +100 post-HSCT in 102 patients with established hepatic VOD and MOD, compared with 25.0% in 32 historical controls identified out of 6867 medical charts of HSCT patients by blinded independent reviewers (estimated difference adjusted for propensity score=23%, 95.1% CI, 5.2-40.8; P=0.0109, propensity-adjusted analysis). Observed day +100 complete response rates equaled 25.5% for defibrotide and 12.5% for controls (estimated difference adjusted for propensity score=19%, 95.1% CI, 3.5-34.6; P=0.0160). Hypotension was the most common AE in both groups (39.2% with defibrotide, 50% for historical controls). Overall, there was no difference in the incidence of common hemorrhagic AEs (64% with defibrotide and 75% with historical control).

Under a broad expanded-access treatment protocol involving 1000 patients with VOD and with or without MOD post HSCT,\textsuperscript{3,3} day +100 survival was 58.9% (95% CI, 55.7%-61.9%) in patients treated with defibrotide. Overall, the study included 198 (19.8%) patients with ALL. Among 512 patients with MOD, 49.5% (95% CI, 45.0%-53.0%) were alive at day +100 post-HSCT. In 488 patients without MOD, the +100 day post-HSCT survival was 68.9% (95% CI, 64.5%-72.9%). These results were consistent with an earlier phase 2 study that enrolled 149 patients with VOD and MOD, with an overall complete response rate of 46% and day +100 post-HSCT survival rate of 42%.\textsuperscript{4} The expanded-access treatment protocol data reported grade ≥3 treatment-related AEs in 3% of patients with no treatment-related deaths. The incidence of grade ≥3 expected AEs was 55% with the most common being renal failure (31%), hypotension (29%), hypoxia (26%), and pulmonary AEs (22%). Defibrotide-related toxicity resulting in treatment discontinuation occurred in only 4% of patients.

Post-chemotherapy without HSCT
In a posthoc analysis, the efficacy of defibrotide post-chemotherapy without HSCT has also been studied under the expanded access protocol. A total of 82 patients (51% with ALL) received defibrotide within 30 days of starting a variety of chemotherapy regimens without HSCT.\textsuperscript{6} The 70-day Kaplan-Meier estimate survival was 74.1% (65.8% and 81.3% in patients with and without MOD, respectively).\textsuperscript{6} Further exploratory analysis in this subset of patients suggests that earlier defibrotide initiation post-VOD diagnosis was associated with improved survival.\textsuperscript{6}

Sincerely,

Francois Di Trapani
Vice President Global Scientific Affairs

References (enclosed):
1. DEFITELIO prescribing information. 2016. Jazz Pharmaceuticals, Inc.


