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A Novel Therapy for Refractory CBFA2T3::GLIS2-associated AMKL Using STRO-002 And Plerixafor

Amy Johnson MD, MBA
Children's Mercy Hospital

Alan S. Gamis
Children's Mercy Hospital

Arturo Molina

Soheil Meshinchi

Karen Lewing
Children's Mercy Hospital

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A Novel Therapy for Refractory *CBFA2T3::GLIS2*-associated AMKL Using STRO-002 And Plerixafor

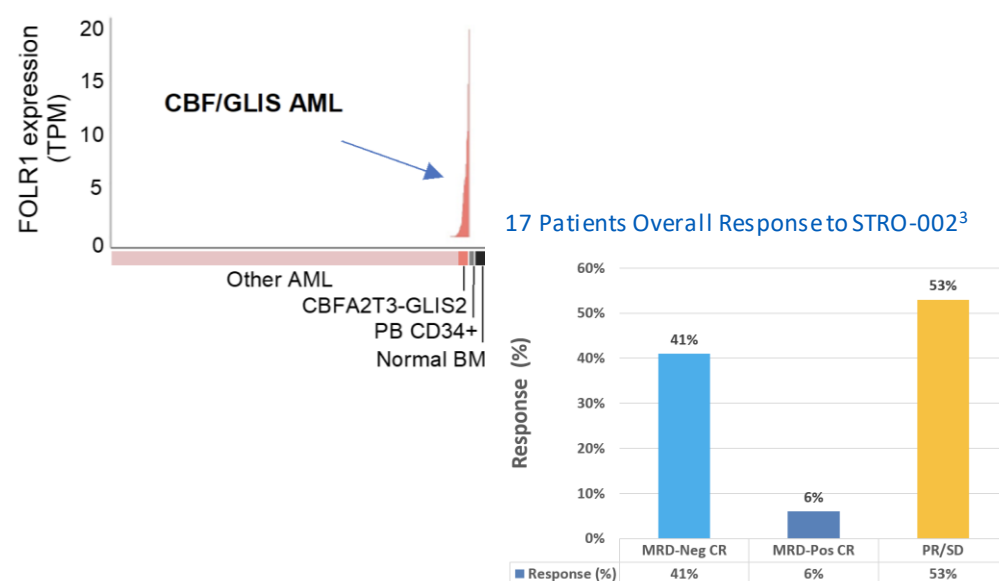
Amy Johnson MD¹; Alan Gamis MD¹; Arturo Molina MD, MS²; Soheil Meshinchi MD, Ph.D.³; Karen Lewing MD¹

¹Children's Mercy Hospital, Kansas City, MO, ²Sutro Biopharma, South San Francisco, CA, ³Fred Hutchinson Cancer Research Center, Seattle, WA

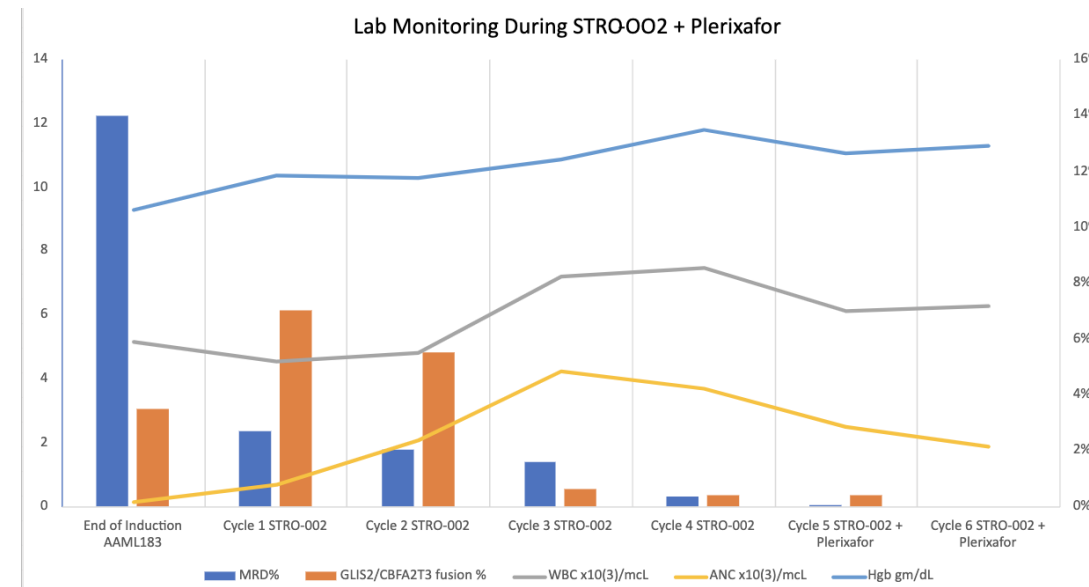
Background:

- CBFA2T3::GLIS2*-associated AML is an aggressive form of AML with a very poor prognosis with marrow localization of leukemic blasts likely mediated by high CXCR4 (CD184) expression.¹
- The *CBFA2T3::GLIS2* fusion gene is among the most common oncogenic transcript in pediatric AMKL with high expression of CXCR4. Plerixafor, a reversible CXCR4 antagonist, mobilizes marrow stem cells and leukemic cells.²
- STRO-002 is an antibody/drug conjugate targeting FOLR1. A summary of 17 patients with refractory *CBFA2T3::GLIS2* AML who received STRO-002 reported significant clinical activity with little to no toxicity.³

High Expression of FOLR1 in *CBFA2T3*³



Case Presentation:



- A 2-year-old female presented with fever, arm pain, and bruising and was diagnosed with RAM phenotype AMKL with FOLR1-positive *CBFA2T3::GLIS2* oncogenic fusion.
- She was enrolled on AAML1831 Arm A but Induction therapy was unsuccessful.
- She was transitioned to STRO-002 monotherapy (4.3mg/kg/dose IV every 2 weeks) as an outpatient for 4 cycles. Bone Marrow was assessed every 2 weeks.
- Plerixafor was added for leukemic cell mobilization with Cycles 5 and 6 (Plerixafor 0.24mg/kg/dose 4h prior and 24h post each STRO-002 dose).
- After Cycle 6, our patient achieved 0% MRD by flow and 0% *CBFA2T3::GLIS2* fusion expression.
- She underwent haploidentical bone marrow transplant, but unfortunately relapsed on Day 100.
- Plan to continue STRO-002 with Plerixafor and Donor Leukocyte Infusions.

Conclusion:

- Our patient with refractory *CBFA2T3::GLIS2*-associated AMKL achieved MRD-positive CR with STRO-002 alone and MRD-negative CR when plerixafor was added in combination.
- The treatment was well-tolerated by our patient. This initial report of the STRO-002-Plerixafor combination supports further evaluation in similar patients.

References:

- Andrew J. Messen, Chad A. Hudson, Todd A. Alonzo, Robert B. Gerbing, Laura Pardo, Fan-Chi Hsu, Loren L. Lott, Fangyan Dai, Keely Ghiradelli, Yi-Cheng Wang, E. Anders Kolb, Todd M. Cooper, Jessica A. Pollard, Michael R. Loken, Richard Aplenc, Lisa Eidenschink Brodersen, Soheil Meshinchi; CXCR4 (CD184) Expression in Pediatric AML Is Associated with Bone Marrow Retention, Specific Disease Characteristics, and Worse Outcomes: A Report of 1004 Patients from the Children's Oncology Group AAML1031 Protocol. *Blood* 2022; 140 (Supplement 1): 3452-3453. doi: <https://doi.org/10.1182/blood-2022-163682>
- Tang T, Le Q, Castro S, Pardo L, McKay CN, Perkins L, Smith J, Kirkey D, Abrahams C, Bedard K, Molina A, Brodersen LE, Loken MR, Tarlock K, Meshinchi S, Loeb KR. Targeting FOLR1 in high-risk *CBFA2T3-GLIS2* pediatric AML with STRO-002 FOLR1-antibody-drug conjugate. *Blood Adv.* 2022 Nov 22;6(22):5933-5937. doi: 10.1182/bloodadvances.2022008503. PMID: 36149945; PMCID: PMC9701621.
- Meshinchi, S. (2022, December 10-13). *Anti-Leukemic Activity of STRO-002, a Novel Folate Receptor-α (FR-α)-Targeting ADC in Relapsed/Refractory CBFA2T3::GLIS2 AML*. 64th ASH Annual Meeting and Exposition.