**BACKGROUND**

The Berlin patient is presumed to be the only person cured from HIV-infection by hematopoietic stem cell transplantation (HSCT) from a homozygous CCR5-d32 unrelated donor. Attempts to reproduce cure by HSCT have failed because of either viral rebound or death due to the underlying malignancy. We here report a 46y old patient alive, well and undetectable for HIV (RNA/DNA) three years after allogeneic CCR5-d32 HSCT.

- Proviral DNA load: Roche COBAS® AmpliPrep/COBAS® TaqMan® HIV-1 v2.0 assay or the Roche cobas® 6800 system (Roche Diagnostics, Germany) and 1 ml ofuffy coat.
- Total DNA extraction: Roche MagNA Pure System; PBMC count (PBMC/µl); content of β-globin (LightCycler® Control Kit DNA, Roche Diagnostics, Germany) in 1 µl ofuffy coat eluate. The proviral DNA load was calculated to the final result of \( \log_{10}^{\text{cop/10}^{9}}\) PBMCs.
- ddPCR: in duplex mode using the QX200 platform (Bio-Rad) with primers and a probe.
- Proviral DNA load: 1.45 \( \log_{10}^{\text{cop/10}^{9}}\) PBMC; WB: all anticipated bands could be detected.

**METHODS**

- AML diagnosis (acute myeloid leukemia, inv16, CBF-MYH11) in 01/2011
- Diagnosis of HIV-infection in 10/2010; initial treatment TDF/FTC+DRV/r; switch DRV to RAL to avoid interactions with chemotherapy in 03/2011
- Complete remission (CR) of AML after 2 induction courses (ICE) + 3 consolidation courses (AML-SG07/04)
- AML relapse 09/2012, treatment: A-HAM + 2nd cycle high-dose cytarabine (HiDAC)
- 2nd CR: 8.74\( \times 10^{10} \) kg unmodified peripheral blood stem cells from a female 10/10 CCR5-d32 donor after conditioning with fludarabine and treosulfan in 02/2013
- HIV resistance analysis: no significant resistance mutations and the coreceptor usage was predicted as R5-tropic (Sanger sequencing: FPR 44.5%, NGS: 0.14% X4 at 3.5% FPR, geno2pheno).
- Proviral DNA load: 1.45 \( \log_{10}^{\text{cop/10}^{9}}\) PBMC; WB: all anticipated bands could be detected.

**POST-TRANSPLANTATION**

- Uninterrupted continuation of ART (since 06/2014: ABC/3TC/DTG)
- VL remained undetectable in plasma and liquor
- 2nd relapse of AML in 06/2013
- Molecular remission after 8 courses of 5-Azacytidine and 4 donor lymphocyte infusions
- Proviral HIV DNA: all samples negative (<LOD: limit of detection) by conventional and ddPCR in two different labs, namely PBMCs, rectal biopsy and bone marrow*
- Western blots: incomplete patterns with fading bands

**PRE-TRANSPLANTATION**

- AML diagnosis.
- Diagnosis of HIV-infection 10/2010; initial treatment TDF/FTC+DRV/r; switch DRV to RAL to avoid interactions with chemotherapy 03/2011
- Complete remission (CR) of AML after 2 induction courses (ICE) + 3 consolidation courses (AML-SG07/04)
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- Proviral DNA load: 1.45 \( \log_{10}^{\text{cop/10}^{9}}\) PBMC; WB: all anticipated bands could be detected.

**PLANNED ASSAYS**

- Proviral DNA in lymph nodes
- Proviral DNA in additional biopsies from ileum and rectum
- Viral outgrowth assay
- T-cell response assay
- Cellular immune response assays

**SUMMARY & CONCLUSION**

Like in the Berlin patient, all tests from the Düsseldorf patient performed so far suggest that HIV may have been eradicated and that he may be the second individual cured from HIV by allogeneic CCR5-d32 HSCT. Further investigations will be performed before considering the discontinuation of ART.

We are grateful to the patient for his participation.