Objective: NOTCH1 is now established to play a key role in the prognosis of several hematological malignancies. Notch proteins are multifaceted and involved in several key cellular functions with extensive crosstalk with other critical pathways; therefore, it is important to investigate NOTCH1 expression and its influence on other oncogenic pathways molecules in AML. In this pilot study, we correlated NOTCH1 and associated pathway expression patterns among childhood AML patients and correlated it with hematological parameters and overall survival (OS) data. **Methodology:** RNA from diagnostic BM biopsies (n=35) were subjected to expression analysis employing nCounter Pan-Cancer pathway panel by Nanostring technologies. Laboratory and clinical data were correlated with expression of NOTCH1 and several other oncogenic signaling pathways (n=780). nSolver software v3 and SPSS software v24.0 were utilized for statistical evaluation. Hierarchical clustering and principle component analyses were performed employing Qlucore Omics Explorer v3.2. **Results:** 35 -AML patients (median age 8 yrs., range <1-18 yrs.) were dichotomized into low NOTCH1 (17/35; 49%) and high NOTCH1 (18/35; 51%) groups based on receiver operating characteristic (ROC) curve analysis (74% AUC; 82% sensitivity /68% specificity). Age, gender, hematological data or molecular risk factors (FLT3 mutation/molecular fusion) exposed no significant differences across these two distinct NOTCH1expression groups (P > 0 .05). High NOTCH1 expression was linked with high expression of NOTCH1 legend (Dll1) (P<0.001/fold >2.5). Our data also showed that high NOTCH1 mRNA is interrelated with heightened expression of positive regulator of the NOTCH signaling pathway (DTX1/DTX3). High NOTCH1 samples also showed high expression of TGRF-b associated protein SETBP1(P<0.001/fold >2.5) (Figure 1A). The level of NOTCH1 expression did not correlate with mortality {5/17 (29%) vs. 6/17; (35%) P > 0.05}. Low NOTCH1 expressers showed better OS {740 days vs. 579 days; log-rank P=< 0.007; HR 6.3 (1.36-29.26)} **Conclusion:** Our pilot study identified high Notch1 expression through canonical pathway as an important poor prognostic marker among pediatric AML patients which is independent of conventional prognostic markers and can provide insights into novel potential therapeutic target. Our study has identified that high expression of the molecules linked with NOTCH1 pathway are an important poor prognostic marker among childhood AML patients. NOTCH1 expression also shows cross talk with several other signal transduction pathways especially TGFb / SETBP1 which are also linked with poor prognosis.

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OP 06

EVALUATION OF COVID-19 FEAR AND QUALITY OF LIFE IN PATIENTS WITH HEMATOPOIETIC STEM CELL TRANSPLANTATION DURING THE COVID-19 PANDEMIC

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Objective: The coronavirus disease 2019 (COVID-19) pandemic has an impact on physical health, but also has effects on mental health. With the COVID-19 pandemic, the level of fear increases and fear triggers many psychological diseases such as depression. We aimed to determine the COVID-19 fear situation in hematopoietic stem cell transplantation (HSCT) patients and to examine its relationship with the quality of life. **Methodology:** In this prospective study, 64 patients who underwent HSCT during the pandemic (between 11 March 2020 and 31 December 2020) were included. The COVID-19 fear situation was evaluated with the Fear of COVID-19 Scale (FCV-19S). Quality of life was evaluated with the European Organization for Quality of Life Research and Treatment Core Questionnaire (EORTC QLQ-C30) (version 3). **Results:** The median FCV-19S score was 16.5 (12.0-22.0). The FCV-19S score was significantly higher in urban residents than rural residents (19.0 (15.0-23.5) vs 14.0 (9.0-22.0) (p=0.44). The general health score was 59.64 ± 20.04. The strongest positive correlation between fear level and quality of life was found in emotional function (r=0.474, p <0.01). In addition, a weak, significant, positive correlation was observed between role function, nausea-vomiting, pain, anorexia, and fear level. **Conclusion:** FCV-19S is a short, safe and valid tool that can be used to determine the COVID-19 fear level in vulnerable patient groups such as HSCT patients and to direct them to the necessary psycho-oncological support.

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OP 07

UMBILICAL CORD BLOOD (UCB) AND BONE MARROW (BM) AS A SOURCE OF NATURAL KILLERS (NK) FOR KIR-ALLOREACTIVE ADOPTIVE IMMUNOTHERAPY (KIR-AI)

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Objective: NK are innate lymphoid cells with the ability to rapidly recognize and exhibit cytotoxicity toward tumor and virus infected cells in HLA-independent manner without prior activation. KIR-AI is the next promising step after KIR-alloreactive NMAC alloBM transplantation (not only in hematology). We evaluate NK amount, the balance of activating and inhibitory receptors (rp) of different sources, outcomes of KIR-AI UCB/BM. **Methodology:** NK UCB, BM, peripheral blood (PB) were evaluated by flow cytometry (CD3, 7, 16, 56, 94, NKG2A),

KIR by PCR. Mathematical model was developed for evaluation the balance of activating and inhibitory rp as an index of cytotoxic activity (**ICA**) of mature NK. To select donor (dn) for KIR-AI we investigate med 3 samples (range 3-8) BM/UCB. The indication - salvage therapy, ECOG>3. BM-dn with low ICA were excluded. Lymphodepletion included CyFlu (up to 3 d), both BM (12 pts) and UCB (11 pts). **Results:** NK UCB ranged 5-56% (med 16) of lymphocytes. No any differences between NK -UCB and BM (similar to PB). For dn and pts no ICA differences by sex and age, ICA depend on depression and virus. For pts no ICA difference by type of cancer, germinal mutations, but strong correlation with nearest outcome of cancer. FU med 9 mo (2-52). OS (11 pts, 14 UCB-transfusions) med 6 mo (2+ -10), comparable to BM med 8 mo (2-48). AI outcomes depend on the intensity of lymphodepletion and ICA UCB/BM. **Conclusion:** Considering acceptable toxicity of lymphodepletion and good AI tolerability, including poor pts, the indications for cellular anticancer treatment could be expanded. We start pilot using UCB for KIR-AI for overcome chemoresistance and to achieve complete remission of disease after finishing anticancer treatment of solid tumors and for MRD-eradication in hematology. Additional undeniable advantage of UCB KIR-AI is quick availability of UCB from a KIR-typed UCB register.

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OP 08

HUMORAL IMMUNITY RESPONSES AFTER VACCINATION FOR HEPATITIS B VIRUS IN AUTOGRAFTED PATIENTS: A SINGLE CENTER EXPERIENCE

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Objective: The effectiveness of vaccinations post hematopoietic stem cell transplantation (HSCT), is a reliable marker for immune system's functionality assessment. In autologous HSCT (AHSCT) setting, the general aspect is that the immune system recovers quite soon and patients (pts) are considered to be immunocompetent in a period of approximately 3-6 months post AHSCT. We evaluated the hepatitis B virus (HBV) vaccination responses in autografted pts who were in remission and off chemotherapy post AHSCT. **Methodology:** 27 autografted pts aged 51,6 (22-67) ys, who had antiHbs titers <10 IU/ml before AHSCT and at the time of vaccination, were studied. After a successful engraftment the median absolute lymphocytes count at +3 months was 1740(450-4090)/mm^3. In 4,3(0,6–8,5) ys post AHSCT, 3 doses of recombinant HBV vaccine were given monthly. The response rates for pts who completed 3 vaccine doses, compared with an internal group of healthy individuals, vaccinated in the same period with the same product. **Results:** After the 1st, 2nd and 3rd dose the response rates in the study group were 11%, 81% and 88% respectively. No factor statistically significantly influenced the achievement of protective antiHbs titers. The responses were lower as compared to product's efficacy profile (19%, 86% and 100% after the 1st, 2nd and 3rd dose respectively), while in the comparative analysis with the internal control group, a trend for inferior responses in autografted pts was also noticed (88% vs 100%, p=0,07). **Conclusion:** This study, in a relatively homogenous group of pts, to our knowledge, is the only one that directly compares the HBV vaccine responses in autografted pts with healthy individuals. Although vaccination was offered late post AHSCT, the responses were lower compared to healthy individuals, indicating a possible long lasting immune impairment post AHSCT highlighting the necessity of prolonged surveillance and intensified vaccination programs for autografted pts.

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OP 09

ANTIBODY RESPONSES AND SAFETY OF THE COMMERCIALLY AVAILABLE VACCINES AGAINST SARS-COV-2 VIRUS IN ALLOGRAFTED PATIENTS: REAL WORLD DATA FROM A SINGLE CENTER

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Objective: Patients (pts) who have undergone allogeneic stem cell transplantation (alloSCT) are at high-risk for life-threating complications post SARS-CoV-2 infection, and the mortality rates has been reported of approximately 30-35%. The currently available vaccines proved their effectiveness in the general population by reducing the severity of the COVID-19 infection however, scant data exist regarding the safety and efficacy of the commercially available vaccines in allografted pts. **Methodology:** After a median of 2,7 (0,3-6,7) ys post alloSCT, 20 pts received within a median of 42 days, 2 vaccines of either Pfizer (n=17) or combinations of Pfizer with Moderna (n=2) or AstraZeneca (n=1). Off immunosuppression without evidence of active GvHD were 14 pts, 1 was only on Cyclosporine (CSP) while 5 were on steroids plus CSP or MMF or Ibrutinib for GvHD treatment. Automated commercial chemiluminescence immunoassay (CLIA) against spike (S1/