Myeloma subtype, ISS, post-ASCT response and PET activity were significantly associated with PFS. Post-ASCT PET(-) CR had significantly longer PFS than patients with PET(+) CR (31.4 ± 9.9 vs 18.4 ± 3.5 months; p<0.029). In conclusion, having an ISS-3 stage myeloma, pre and post-ASCT response <VGPR had negative impact on PFS. Contamination of PBSC harvests with APC was associated with shorter PFS. Our results also demonstrate the importance of achieving PET negativity after transplantation. Thus, not only an immunological CR but also PET(-) CR should be achieved for long term PFS.

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**Incidence and Risk Factors for the Development of Idiopathic Pneumonitis Syndrome (IPS) after Autologous Hematopoietic Cell Transplantation (AutoHCT) for Patients with Lymphoma**

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**Introduction:** High-dose therapy with AutoHCT is a standard component of therapy for many patients with Hodgkin (HL) and non-Hodgkin lymphoma (NHL). IPS is a known toxicity of AutoHCT which can cause significant morbidity and mortality. The most common agent associated with IPS has traditionally been high-dose BCNU (carmustine). Data on incidence of IPS in recent era and its relation with conditioning regimens are scarce.

**Methods and Patients:** Using the Center for International Bone Marrow Transplant Registry (CIBMTR), we studied 4,573 patients with lymphoma who underwent AutoHCT from 1995-2008 using the following conditioning regimens: BEAM (n=1730), CBVlow (n=1249), CBVhigh (n=604), BuCy (n=789), and CyTBI (n=545). We investigated the reported incidence of and explored clinical risk factors for its development, including the dose of BCNU and its impact on outcome (above vs. below 375 mg/m² in CBV regimens). We then analyzed the impact of IPS on outcomes including transplant-related mortality (TRM), progression-free survival (PFS), and overall survival (OS). Use of different regimens was as follows:

**Results:** The incidence of IPS by 1 year after AutoHCT was: BEAM (3%), CBVlow (3%, HR 1.07 [0.72, 1.60], p=0.742), CBVhigh (6%, HR 1.88 [1.24, 2.83], p=0.003), BuCy (4%, HR 1.25 [0.82, 1.92], p=0.30), and CyTBI (5%, HR 2.03 [1.30, 3.19], p=0.002). Multivariate analysis showed the following risk factors for developing IPS: 1) HL (HR 2.33, [1.68, 3.24], p < 0.001), 2) female gender (HR 1.39 [1.05, 1.82], p=0.019), 3) chemotherapy-resistant disease at time of AutoHCT (HR 1.9 [1.29, 2.79], p=0.001), and age ≥ 55 (HR 1.54, [1.13, 2.09], p=0.006). In the entire cohort, patients who developed IPS had a significantly higher rate of TRM (HR 4.02, [3.09, 5.24], p < 0.001), shorter PFS (HR 1.82, [1.51, 2.20], p < 0.001), and shorter OS (HR 2.46, [2.06, 2.94], p < 0.001).

**Conclusion:** IPS remains an important toxicity after AutoHCT for patients with lymphoma and adversely effects overall outcomes. Risk factors include higher doses of BCNU, TBI, female gender, older age, chemotherapy resistant disease and a diagnosis of HL. Investigation into strategies for the prevention of IPS after ASCT is warranted.

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**Suboptimal Long Term Engraftment Does Not Negatively Impact Overall Survival after Autologous Peripheral Blood Stem Cell Transplant**

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88% of patients achieved optimal engraftment at 1 year. The median cell dose was 4.7 x10^6 CD34+ cells/kg, and our institutional minimum cell dose is 2 x10^6 CD34+ cells/kg. CD34 cell dose ≥ 3 x10^6 CD34+ cells/kg and age < 60 were predictive for optimal long term engraftment. Disease type, gender, number of prior therapies and prior radiation therapy were not predictive of achieving long term engraftment. By landmark analysis at 1 year, optimal engraftment was not predictive for progression free survival or overall survival in all patients, although there was a trend for worse outcome with poor engraftment in HL and NHL. Incomplete long term engraftment after autologous transplant is relatively rare with the most important predictors identified as CD34 cell dose and age. For those patients who survive one year, PFS and OS are not diminished afterward.

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**25-Hydroxyvitamin D Concentrations and Overall Survival in Autologous Hematopoietic Stem Cell Subjects**

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