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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Author and Year** | **Transplant** | **Most common indication** | **Specimens type** | **Specimens analysis** | **Population** | **Aim** | **Groups** | **Patients** | **Results** | **Ref** |
| Jenq, 2012 | allo HSCT | Leukemia | fecal | 16s rRNA gene sequencing | Adults | microbiota variation | GVHD (8 pts) vs No GVHD (10 pts) | 18 | GVHD is associated with reduced flora diversity (increases in Lactobacillales and decreases in Clostridiales). | [60] |
| Vossen, 2014 | allo HSCT | Leukemia | - | - | Children | occurrence of GVHD | GID (57 pts) vs No GID (55 pts) | 112 | Successful total GID resulted in significantly less acute GVHD (p = 0.013; log-rank test). | [72] |
| Holler, 2014 | allo HSCT | Leukemia | fecal | 16s rRNA gene sequencing | Adults | microbiota variation | pre and post transplant comparison | 31 | Increase in Enterococci and decrease in other Firmicutes and phyla after allo HSCT. Shift most pronounced in active GVHD. | [63] |
| Jenq, 2015 | allo HSCT | Leukemia | fecal | 16s rRNA gene sequencing | Adults | microbiota variation and outcome | pre and post transplant comparison | 115 | Intestinal flora diversity and Blautia abundance is associated with reduced GVHD lethality. | [62] |
| Taur, 2014 | allo HSCT | Leukemia | fecal | 16s rRNA gene sequencing | Adults | microbiota variation and outcome | pre and post transplant comparison | 80 | Intestinal microbiota diversity is an independent predictor of mortality. | [61] |
| Taur, 2012 | allo HSCT | Leukemia | fecal | 16s rRNA gene sequencing | Adults | microbiota variation and outcome | pre and post transplant comparison | 94 | Bacterial "domination" is associated with increased risk of bacteremia. | [58] |
| Chiusolo, 2015 | allo/auto HSCT | Leukemia | fecal | 16s rRNA gene sequencing | Adults | Microbiota variation and outcome | pre and post transplant comparison | 8 | Increase of Proteobacteria and reduction of Bacteroidetes after auto HSCT. Increase of Bacteroidetes and reduction of Firmicutes after allo HSCT.  GVHD associated with more Firmicutes and Proteobacteria and less Bacteroidetes. | [64] |

**Table 1:** Summary of human studies assessing gastrointestinal microbiota in Graft versus Host Disease.

Abbreviations: allo HSCT, allogenic hematopoietic stem cell transplantation; auto HSCT, autologous hematopoietic stem cell transplantation; GVHD, graft versus host disease; GID, gastrointestinal decontamination.