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Title: Functional exercise capacity, lung functions, and muscle strength in allogeneic hematopoietic stem cell transplantation recipients suffering from graft versus host disease

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Body: Background: Graft versus host disease (GVHD) is one of the major complications of allogeneic hematopoietic stem cell transplantation (HSCT) and is a reaction of donor immune cells against host tissues. Reduced exercise capacity, lung function abnormalities and muscle weakness are frequently seen during the treatment process. However, no study investigated the impact of GVHD in allogeneic HSCT recipients. Aim: To compare functional exercise capacity and pulmonary functions, carbon monoxide diffusing capacity (DLCO), respiratory and peripheral muscle strength in allogeneic HSCT recipients with and without GVHD. Methods: Ten patients (40.10±15.64 years) with and 28 patients (38.75±12.05 years) without GVHD, allogeneic HSCT recipients were included. Pulmonary functions and DLCO were measured. Functional exercise capacity was evaluated using 6-minute walk test (6MWT), respiratory muscle strength (MIP, MEP) using mouth pressure device, quadriceps femoris (QF) and hand grip (HG) muscles strength using dynamometer. Results: Six-MWT distance (p=0.001), FEV_1% (p=0.005), FVC% (p=0.004), PEF% (p=0.016), $FEF_{25-75\%}$ (p=0.018), DLCO% (p=0.009), MIP (p=0.07), QF (p=0.017) and HG muscle (p=0.021) strength were significantly lower in recipients suffering from GVHD compared to recipients without GVHD. Conclusions: Graft versus host disease additionally reduces functional exercise capacity, pulmonary functions, diffusion capacity, respiratory and peripheral muscle strength. Studies are needed to investigate the effects of inspiratory, peripheral muscle and aerobic exercise training in allogeneic HSCT recipients suffering from GVHD.