

Preoperative Exercise during Neoadjuvant Therapy for Pancreatic Cancer: A Pilot Study

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ABSTRACT

Exercise improves cancer treatment outcomes including health-related quality of life and physical functioning. Patients with pancreatic cancer are generally older adults, and frailty and cachexia are prevalent. Chemotherapy and chemoradiation are increasingly administered prior to pancreatic cancer surgery, and sarcopenia has been shown to accompany these therapies. Preoperative exercise may improve health, well-being, and perioperative outcomes among patients undergoing preoperative therapy for pancreatic cancer. The purpose of this pilot study was to determine the feasibility of exercise in this context. Feasibility was defined as patients completing, on average, 60% of recommended weekly exercise minutes. Twenty patients ($M=64$ years old, $SD=9.9$; 42% female) enrolled in a home-based exercise program during preoperative therapy (chemotherapy and/or chemoradiation and preoperative "rest", $M=21.2$ weeks total, $SD=16.4$). Exercise recommendations included moderate-intensity walking for 20-30 minutes/day on ≥ 3 days/week and moderate-intensity resistance exercises for 30-45 minutes/day on ≥ 2 days/week. Exercise recommendations (120 minutes of moderate-intensity activity/week) were based on American College of Sports Medicine and American Cancer Society recommendations (150 minutes of moderate-intensity activity/week), but reduced due to patients' older age and concurrent preoperative therapy. Resistance exercises targeted upper body, lower body, and abdominal muscles, and patients were instructed to perform 3 sets of 8-12 repetitions of multiple exercises for each region during each session. Patients received Yamax Digiwalker pedometers, graded resistance tube sets, and booklets and DVDs with instructions and safety tips. Research staff provided detailed instructions and resistance exercise demonstrations at enrollment and monitored and encouraged adherence with biweekly phone calls. Patients recorded minutes of walking and resistance exercise in daily logs. On average, patients reported 73.9 minutes of walking ($>100\%$ of recommendation, $SD=72.4$) and 43.1 minutes of resistance exercise per week (71.8% of recommendation, $SD=39.0$). Patients reported the most walking during chemoradiation ($M=94.7$ minutes/week, $SD=104.3$), followed by preoperative "rest" ($M=77.4$ minutes/week, $SD=80.4$), and chemotherapy ($M=70.8$ minutes/week, $SD=75.2$). Patients reported the most resistance exercise during the preoperative "rest" period ($M=51.6$ minutes/week, $SD=52.3$), followed by chemoradiation ($M=38.0$ minutes/week, $SD=36.8$), and chemotherapy ($M=31.1$ minutes/week, $SD=38.1$). Walking and resistance exercise are feasible for patients undergoing preoperative therapy for pancreatic cancer. Varying levels of fatigue and treatment-related side effects may affect exercise during different treatment phases.