TACSM Abstract

Gastrocnemius Mass Is Lower 28 Days After Recovery From A Cycle Of Cisplatin In Mice

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ABSTRACT

Platinum-based chemotherapeutic agents, such as cisplatin, are widely employed as a primary treatment modality for various cancer types. Despite their efficacy, cisplatin's mechanism of action involves inducing DNA damage in cells, leading to pronounced acute and long-term side effects. One well established side effect is rapid loss in muscle mass. However, very little is known about the long-term effects of chemotherapy treatment on muscle size. **PURPOSE**: of this study was to analyze the long-term effects of cisplatin on muscle mass recovery. We hypothesized that cisplatin would have a negative long-term effect on muscle recovery. **METHODS:** 5-6 month-old CD2F1 mice were divided into two groups receiving injections of either Cisplatin (Cis) or Vehicle (Veh); n = 10 per group. A clinically relevant chemotherapy cycle was completed by a once weekly injection of 5mg/kg body weight of cisplatin for four weeks. Veh mice received an equal volume of saline. Following the cycle, mice recovered in their cage for 28 days and then hindlimb muscles were taken. Data were analyzed using independent t-test and presented as mean ± standard error. **RESULTS**: The gastrocnemius mass was significantly lower (p=0.008) in cisplatin-treated mice (139.20 ± 4.98) compared to the vehicle-treated group (147.50 ± 2.26). Conversely, the soleus did not show a significant difference (p=0.756) between Cis (9.90 ± 0.46) and Veh (10.10 ± 0.44) groups. Similarly, the Plantaris did not demonstrate a significant difference (p=0.950) in Cis treatment (18.65 ± 0.57) compared to Veh (18.65 ± 0.54). **CONCLUSION:** These data indicate a diminished ability of the gastrocnemius, the primary hindlimb flexor, to recover after a bout of cisplatin drug treatment. Further research is needed to better understand the mechanisms behind muscle specific differences and failed muscle mass recovery in the gastrocnemius.