ABSTRACT

This study was undertaken to explore the effects of lymphatic blockage on the metabolism of hyaluronan in the skin. In initial experiments, [^3]H] hyaluronan was injected subcutaneously into the tail skin of rats that either had no surgical intervention (control) or into those that had their lymphatic drainage blocked two hours earlier (acute lymphedema) or after the lymphatics had been blocked for three months (chronic lymphedema). The removal of tritiated hyaluronan from the injection sites was determined by the appearance of [^3]H] in the plasma. The results showed that the clearance of injected hyaluronan was delayed in rats with lymphatic blockage. The half-life of injected hyaluronan in the controls was ~70-75 hr, compared with ~105-110 hr in the lymph blocking rats. The levels of radioactivity in the plasma from rats with both acute and chronically blocked lymphatics were lower than that of control rats during the entire follow up period. In addition, biochemical analysis revealed that there was a significant increased amount of hyaluronan in the tail skin three months after lymphatic blocking. These results suggest that lymph absorption is an important factor in the transport of hyaluronan from the interstitium. Blockage of regional draining lymphatics likely impairs the catabolism of hyaluronan, which stagnates in skin tissue.