

The secretory characteristics of mast cells isolated from the human large intestinal mucosa and muscle

Abstract:

The use of a collagenase dispersion technique has allowed us to compare size, histamine content and the secretory characteristics of mast cells from the mucosal and muscle layers of the human large intestine. Mast cells from the mucosa, which constituted 1.8% of the total nucleated cells, contained approximately equal numbers of formalin-sensitive and -insensitive mast cells. Those dispersed from the muscle layer constituted 3.2% of the total nucleated cells and were almost all formalin insensitive. The cells from both layers were similar with respect to size and mean cell histamine content. Anti-IgE released up to 15.1% and 16.5% of total cell histamine in the mucosa and muscle, respectively, with similar concentration-response characteristics. The kinetics of anti-IgE-induced release, however, were different, mucosal mast cells releasing histamine 55 seconds (P less than 0.05) faster than cells dispersed from intestinal muscle. Cells from both layers also released histamine in response to A23187 in a similar concentration-related fashion. Neither mucosal or muscle mast cells released significant amounts of histamine in response to compound 48/80, substance P, morphine, poly-L-lysine or f-met-leu-phe. Our results show intestinal mast cells possess secretory characteristics similar to those of human lung, adenoids and tonsils, but are different from human skin mast cells. The absence of significant histamine release in response to basic secretagogues from either layer of the human intestine contrasts with studies in the rodent intestine. Furthermore it suggests that in human mast cells, histochemical properties, protease content and secretory characteristics may not be closely associated.