

Mushy Halibut Syndrome

I. Causative Agent and Disease

Smaller halibut of 15-20 lbs caught by sportfishing charters near Homer and Soldotna, AK have had a condition locally known as “mushy halibut”. Typically, this condition consists of fish having large areas of body muscle that is abnormally translucent and flaccid or jellylike. The overall body condition of these fish is usually poor and often they are released because of the potential for inferior meat quality.

II. Host Species

Smaller Pacific halibut, mostly in the Cook Inlet and Homer/Seward areas but affected fish in other areas of Alaska have been reported.

III. Clinical Signs

Fish are asymptomatic except for poor body condition. Large areas of the fillets are abnormally translucent and flaccid in texture.

IV. Transmission

No infectious agents or parasites have been detected in affected fish, therefore, transmission from fish to fish is not likely. A nutritional deficiency is suspected.

V. Diagnosis

Diagnosis is by gross observation of flaccid, translucent musculature with confirmation of a non-infectious degenerative myopathy by histological examination. There is severe muscle fiber atrophy, fragmentation and necrosis with loss of muscle mass. There may be accompanying inflammatory cells, fibrosis and calcification of atrophied fibers. There is some attempt at regeneration as evidenced by internal nuclear chains within myofibers.

VI. Prognosis for Host

Reportedly, the Cook Inlet and Homer/Seward areas are nursery grounds for large numbers of young halibut that feed primarily on forage fish that have recently declined in numbers. Stomach contents of smaller halibut now contain mostly small crab species. Whether this forage is deficient, either in quantity or in essential nutrients is not known. However, mushy halibut syndrome is similar to that described for higher animals with nutritional deficiencies in vitamin E and selenium. This muscle atrophy would further limit the ability of halibut to capture prey possibly leading to further malnutrition and increased severity of the primary nutritional deficiency.

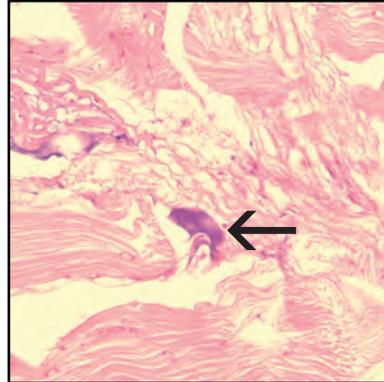
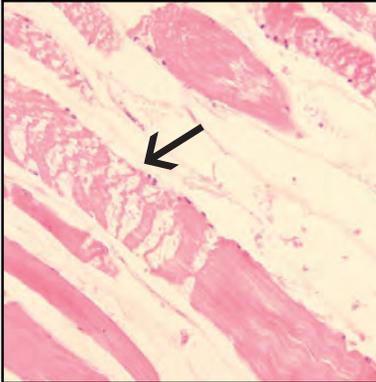
VII. Human Health Significance

Although aesthetically displeasing, there are no known human health concerns with mushy halibut syndrome.

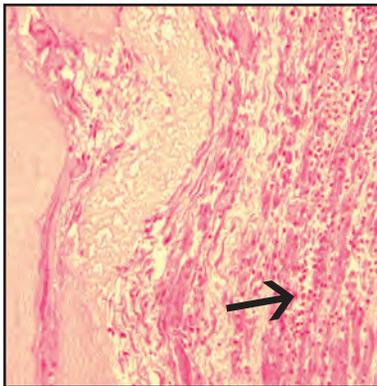
NOTE: mushy halibut is not to be confused with chalky halibut, a condition of opaque flesh with a cooked-like texture. Chalkiness is another flesh quality problem caused by the buildup of excessive lactic acid from overexertion of fish fighting capture for several hours on longline fishing gear.



Flaccid, glistening, translucent flesh typical of mushy halibut syndrome.



Left: Skeletal muscle fiber atrophy with fragmentation (arrow) necrosis and loss of muscle mass (empty spaces); **Right:** Early calcification (arrow) of atrophied muscle fibers.



Atrophied muscle fibers with fibrosis and infiltration of inflammatory cells (arrow).