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SPINAL DEFORMATION IN COMMERCIALY CULTURED ATLANTIC SALMON: A RADIOLOGICAL STUDY

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Introduction: Spinal abnormalities are a major economic loss to salmon producers, because such fish are downgraded at processing. The underlying cause has not been determined, but genetic, husbandry and nutritional factors have been implicated. Materials & Methods A radiographic study was carried out on 2016 random parr from six farms weighing between 55-100g. Eighty six fish from six marine farms were similarly studied. Mammography film and screens were used to obtain images of the parr. A standard fast screen/film combination was used for sea-water fish. Results: Radiographically detectable vertebral lesions were found in 4-11% of parr from the six farms. The changes ranged from a single vertebra showing features such as demineralization, increased density, and slight loss of structure to fish with multiple vertebrae affected by collapse, fusion and change in intervertebral space that could give rise to lordosis or kyphosis, or abnormal vertebrae at several locations. The predominant locations were V1-5, V22-27, and rarely V35 caudal. The radiographic changes in seawater salmon mirrored those found in parr. Discussion: Very few parr were found to have abnormal vertebrae in the peduncle area which suggests that the development of lesions at this location occurs de novo in the sea water phase given that stumpy fish are the most frequent reported deformity at slaughter. It was concluded that minor vertebral change could be detected radiographically in many parr with no observable effect on external morphology. Whether such minor radiographic alteration would proceed to observable morphological change at slaughter weight is open to question.