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Pathology and causes of death of stranded cetaceans on the coast of Andalusia, Spain (2011-2014)

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Between 2011 and 2014, 538 cetaceans, representing 16 species, were found stranded along the Andalusian coast. This study describes the epidemiology, pathological findings and causes of death (CD; grouped as 'pathological entities') of 104/538 (19%) stranded cetaceans (11 species). Samples were analyzed for histology, microbiology and virology. From 104, 59 (57%) were females and 45 (43%) males. Twenty seven (26%) were neonates/calves, 48 (46%) juveniles/subadults and 29 (28%) adults. Nineteen (18%) were very fresh, 54 (51%) fresh, 28 (27%) moderate autolysis, and 4 (4%) advanced autolysis. Twenty-eight (27%) stranded alive, and 76 (73%) were found dead. Thirty-three (32%) were in good nutritional status (NS), 17 (16%) moderate, 39 (37%) poor, 12 (12%) emaciated, and 3 (3%) not determined. A CD was recognized in 95/104 (91,34%) studied individuals. Within natural pathological categories, those associated with good NS involved 17/104 (16%); whereas 36/104 (35%) presented significant loss of NS. Interaction with fishing activities encompassed 19/104 (18%). Neonatal/perinatal pathology enrolled 8/104 (8%). Fatal intra-interspecific traumatic interactions included 9/104 (9%). Ship collisions were determined in 2/104 (2%). Foreign body pathology was observed in 2/104 (2%). Within natural categories CD, infectious pathogens (bacteria, virus, fungi) represent the 64%. Parasitic disease was recognized in 30% with fatal cases involving *Toxoplasma gondii* and *Crassicauda* sp. Fatal neoplastic disease included a pulmonary carcinoma with metastases in a long-finned pilot whale (*Globicephala melas*) and a hepatocelular carcinoma with metastases in a striped dolphin. A case of a fatal asphyxiation in a long-finned pilot whale due to primary bronchi obstruction caused by an European eel (*Anguila anguila*) is reported. Direct human activity is responsible for approximately 22% of cetaceans deaths, while 'natural' pathologies would account for approximately 78%. This study significantly contributes to baseline knowledge on cetacean pathology.

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