

SUPPLEMENTARY MATERIAL: Additional literature on Cetacean morbillivirus

Methods

We reviewed the literature on Cetacean morbillivirus (CeMV) using private and public libraries. Databases searched mostly included PubMed (<https://www.ncbi.nlm.nih.gov/>) and ResearchGate (www.researchgate.net). Keywords comprised cetacean morbillivirus, RT-PCR, SLAM, epidemiology, Mediterranean Sea, odontocetes, mysticetes, epidemiology, serology, Southern Hemisphere. Papers are listed according to the themes mentioned in the discussion section.

Results

(1) *Morbillivirus taxonomy*

Maes P, Amarasinghe GK, Ayllón MA, Basler CF and others (2019) Taxonomy of the order Mononegavirales: second update 2018. Arch Virol 164(4):1233-1244. doi:10.1007/s00705-018-04126-4.

(2) *DMV epidemiology and symptoms*

Bortolotto A, Casini L, Stanzani A (1992) Dolphin mortality along the Southern Italian coast (June–September 1991). Aquat Mamm 18:56-60.

Flach L, Alonso MB, Marinho T, Van Waerebeek K, Van Bressema M-F (2019) Clinical signs in free-ranging Guiana dolphins *Sotalia guianensis* during a morbillivirus epidemic: case study in Sepetiba Bay, Brazil. Dis Aquat Org 133:175-180. doi:10.3354/dao03343.

Soto S, Alba A, Ganges L, Vidal E and others (2011) Post-epizootic chronic dolphin morbillivirus infection in Mediterranean striped dolphins *Stenella coeruleoalba*. Dis Aquat Org 96:187-94. doi:10.3354/dao02387.

Van Bressema MF, Raga JA (2011) Viruses of Cetaceans. In Studies in Viral Ecology Hurst, C., Ed.; John Wiley & Sons: Hoboken, NJ, USA, 2011; pp. 309–332.

(3) *DMV variants, periodic mortalities in Mediterranean cetaceans & diagnostic by reverse transcription polymerase chain reaction (RT-PCR)*

Keck N, Kwiatek O, Dhermain F, Dupraz F and others (2010) Resurgence of Morbillivirus infection in Mediterranean dolphins off the French coast. Vet Rec 166: 654–655.

Centelleghè C, Beffagna G, Palmisano G, Franzo G and others (2017) Dolphin Morbillivirus in a Cuvier's Beaked Whale (*Ziphius cavirostris*), Italy. Front Microbiol 8:111. doi:10.3389/fmicb.2017.00111. eCollection 2017.

Fernández A, Esperón F, Herraéz P, de Los Monteros AE and others (2008) Morbillivirus and pilot whale deaths, Mediterranean Sea. Emerg Infect Dis 14:792–794.

Mazzariol S, Centelleghè C, Beffagna G, Povinelli M and others (2016) Mediterranean fin whales (*Balaenoptera physalus*) threatened by dolphin morbillivirus. Emerg Infect Dis 22: 302–305.

(4) *DMV variants outside the Mediterranean Sea, diagnostic by RT-PCR*

- Bento MC, Eira CI, Vingada JV, Marçalo AL and others (2016) New insight into dolphin morbillivirus phylogeny and epidemiology in the northeast Atlantic: opportunistic study in cetaceans stranded along the Portuguese and Galician coasts. *BMC Vet Res* 12:176. doi:10.1186/s12917-016-0795.
- Fauquier, DA, Litz, J, Sanchez, S, Colegrove, K and others (2017) Evaluation of morbillivirus exposure in cetaceans from the northern Gulf of Mexico 2010–2014. *Endanger Species Res* 33:211–220.
- Sierra E, Fernández A, Zucca D, Cámara N and others (2018) Morbillivirus infection in Risso's dolphin *Grampus griseus*: a phylogenetic and pathological study of cases from the Canary Islands. *Dis Aquat Org* 129:165-174. doi:10.3354/dao03248.2018.
- Wohlsein P, Puff C, Kreutzer M, Siebert U, Baumgärtner W (2007). Distemper in a dolphin. *Emerg Infect Dis* 13:1959-61. doi:10.3201/eid1312.070309.
- Yang WC, Pang VF, Jeng CR, Chou LS, Chueh LL (2006) Morbilliviral infection in a pygmy sperm whale (*Kogia breviceps*) from Taiwanese waters. *Vet Microbiol* 116:69-76. doi:10.1016/j.vetmic.2006.03.014.

(5) *CeMV specific serological tests*

- Duignan PJ, House C, Geraci JR, Early G and others (1995a) Morbillivirus infection in two species of pilot whales (*Globicephala* sp.) from the western Atlantic. *Mar Mamm Sci* 11:150–162.
- Duignan PJ, House C, Odell DK, Wells RS and others (1996) Morbillivirus in bottlenose dolphins: Evidence for recurrent epizootics in the western Atlantic and Gulf of Mexico. *Mar Mamm Sci* 12:499–515.
- Van Bresse MF, Van Waerebeek K, Fleming M, Barrett T (1998) Serological evidence of morbillivirus infection in small cetaceans from the Southeast Pacific. *Vet Microbiol* 59:89-98. doi:10.1016/s0378-1135(97)00169-7.

(6) *Cetacean morbillivirus in the Southern Hemisphere*

- Groch KR, Colosio AC, Marcondes MC, Zucca D and others (2014) Novel cetacean morbillivirus in Guiana dolphin, Brazil. *Emerg Infect Dis* 20: 511-513.
- Groch KR, Santos-Neto EB, Díaz-Delgado J, Ikeda JMP and others (2018) Guiana Dolphin Unusual Mortality Event and Link to Cetacean Morbillivirus, Brazil. *Emerg Infect Dis* 7:1349-1354. doi:10.3201/eid2407.180139.
- Groch KR, Groch KR, Kolesnikovas CKM, de Castilho PV and others (2019) Cetacean morbillivirus in Southern Right Whales, Brazil. *Transbound Emerg Dis* 66: 606-610. doi:10.1111/tbed.13048.
- Kemper CM, Tomo I, Bingham J, Bastianello SS and others (2016) Morbillivirus-associated unusual mortality event in South Australian bottlenose dolphins is largest reported for the Southern Hemisphere. *R Soc Open Sci* 3(12):160838. doi:10.1098/rsos.160838.
- Stephens N, Duignan PJ, Wang J, Bingham J and others (2014) Cetacean morbillivirus in coastal Indo Pacific bottlenose dolphins, Western Australia. *Emerg Infect Dis* 20:666- 670.

(7) *Studies of morbillivirus proteins and mechanisms of virus entry and immune suppression*

- Coughlin MM, Bellini WJ, Rota PA (2013) Contribution of dendritic cells to measles virus induced immunosuppression. *Rev Med Virol* 23:126-138. doi:10.1002/rmv.1735.
- Melia MM, Earle JP, Abdullah H, Reaney K, Tangy F, Cosby SL (2014) Use of SLAM and PVRL4 and identification of pro HB EGF as cell entry receptors for wild type phocine distemper virus. *PLOS ONE* 9(8):e106281. doi:10.1371/journal.pone.0106281.