

Post-mortem detection of SARS-CoV-2 after exposure to seawater

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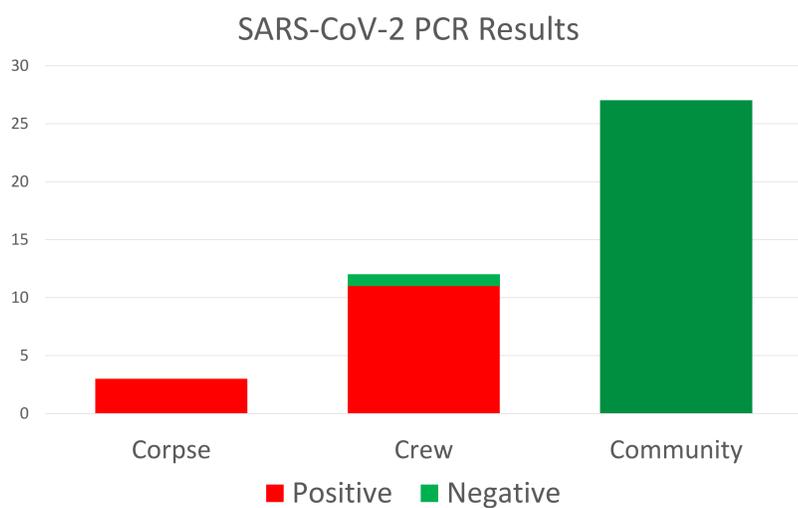
Background

- Vanuatu closes borders for COVID-19 March 2020.
- No community transmission of SARS-CoV-2 has ever occurred in Vanuatu.
- Health teams were trained in COVID-19 protocols.
- April 2021, a deceased 46-year-old male man from a LPG tanker washed ashore in Port Vila, Vanuatu.
- Total seawater exposure was 12-14 hours.
- The body was brought to the Vila Central Hospital (VCH) morgue by a private ambulance service.
- Authorization for autopsy received one week later.

Methods

- Nasopharyngeal swabs were collected for SARS-CoV-2 testing prior to autopsy.
- Samples were processed using the Cepheid GeneXpert PCR platform (99% sens, 93% spec)
- An external autopsy was performed
- Testing of all others on board the tanker and of possible local contacts for SARS-CoV-2 was performed.
- We were not able to determine viral viability due to border restrictions at reference laboratories.

Results



- PCR results for the corpse were positive, including on internal validation.
- Ct values for E & N2 between 25.8 and 27.4 cycles.
- Autopsy revealed no conclusive cause of death.
- Genotyping positive for B.1.1.7 (alpha variant).
- 11 of 12 crew members also tested positive for SARS-CoV-2.
- No community members tested positive.

Discussion

- No previous study has evaluated SARS-CoV-2 viral detection in a corpse in either fresh or seawater.
- Maarten De Rijcke et al, demonstrate that SARS-CoV-2 survival in seawater drops rapidly after 48 hours in a laboratory setting.
- Weijun Guo et al showed that low temperature can prolong SARS-CoV-2 viral stability.
- SARS-CoV-2 has not been detected in sea life to date, but here we demonstrate that it should be considered and further investigated.
- Corpses found in seawater should be handled as if they pose a risk of SARS-CoV-2 transmission.



References

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- Guo, W., Cao, Y., Kong, X., Kong, S., & Xu, T. (2021). Potential threat of SARS-CoV-2 in coastal waters. *Ecotoxicology and Environmental Safety*, 220, 112409. <https://doi.org/10.1016/j.ecoenv.2021.112409>

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