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COVID-19: are humans and wild animals a threat to each other?

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The world is facing the first pandemic of the century, which is having disastrous consequences and still seems far from over. Every day, the scientific community struggles to understand the disease, how prevent and treat it while also trying to understand its indirect consequences for man, animals and the environment. One of the great concerns of biologists and veterinarians is how human SARS-Cov-2 is going to affect wildlife and how this could impact COVID-19 dissemination. Could humans and wild animals be a threat to each other? It is important to reflect about three major possibilities:

i) **A potential reverse zoonosis:**

Although the virus came from a wild animal and some cases of transmission from human to wild animals in captivity have been described, a possible new route of transmission from wild animals (infected by humans) to humans has yet to be observed. This hypothetical transmission route could have disastrous consequences, and even without solid scientific evidence should be considered a threat, as a potential reverse zoonosis could difficult the control of the pandemic even more (Tiwari et al., 2020).

ii) **The decrease of wild populations:**

Based on experimental infections studies and reported cases of natural wild animals' infections by human SARS-Cov-2 (6 big cats in a zoo), (Wang et al., 2020) it is accepted that felines, raccoons, mustelids and monkeys are susceptible to the virus (Tiwari et al., 2020). A possible outbreak could lead to an increase of morbidity and mortality of wild populations, which could be catastrophic since many of susceptible species are already considered vulnerable or at risk of extinction, as is the case of the mountain gorillas. On the other hand, wild animals could become reservoirs of the virus. To prevent the spread of the disease, control measures such as the elimination of groups of wild animals could be imposed, similarly to what occurred recently in mink farms (Oreshkova et al., 2020) and for birds during the outbreak of avian influenza A (H5N1) (de Farias Brehmer et al., 2011).

iii) **The impact of the methods used to control human pandemic in the ecosystems:**

The upsurge in the use and production of healthcare-related plastic products (especially single-use plastics) is already leading to destructive effects on ecosystems (particularly aquatic) and at ultimately on human health. Some examples of this are the accumulation of plastic in the environment; the dispersion of contaminants as polypropylene, polyurethane and polyacrylonitrile; the accidental entanglement of sea life in facial masks; and the toxic effects of quaternary ammonium and sodium hypochlorite used for the disinfection of public areas, including beaches (Silva et al., 2021).

Clearly, directly or indirectly, human COVID-19 will affect wild animals and a possible dissemination of the disease to wildlife could affect the human population. Therefore, some measures must be taken to minimize the consequences. These measures could include prevalence studies based on detecting viral RNA and antibodies in susceptible wildlife species (Konda et al., 2020); restrictions to the interactions between high-risk wild animals and infected humans, particularly in zoos, animal-holding facilities, and national wildlife parks; and well-defined procedures to the elimination of masks, gloves, and other disposables used during the pandemic or their replacement for sustainable alternatives.

Only with a global health approach, will we be able to fight the war against this virus without leaving an indelible mark on other species and the environment, and prevent the appearance of other pandemics arising from zoonotic diseases.

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