Virological assessment of hospitalized patients with COVID-2019 Roman Wölfel et al. Nature , April 1 2020

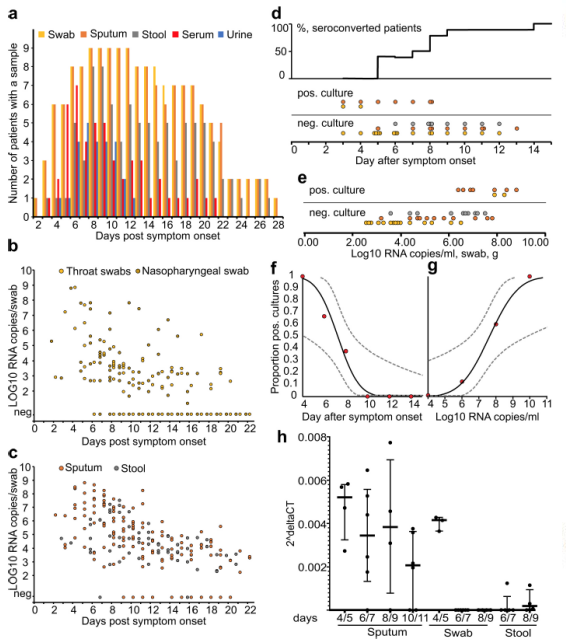

Fig. 1 | Hallmarks of viral shedding in aggregated samples. A, samples and sample types per day. B, viral RNA concentrations in upper respiratory tract samples. C, viral RNA concentrations in sputum and stool samples. D, seroconversion and virus isolation success dependent on day post onset of symptoms. Top panel shows fraction of seroconverted patients, bottom shows aggregated results of virus isolation trials. E, virus isolation success dependent on viral load. F and G, projected virus isolation success based on probit distributions. The inner lines are probit curves (dose-response rule). The outer dotted lines are 95% CI. For less than 5% isolation success, the estimated day was 9.78 (95% CI: 8.45-21.78) days post-onset and the estimated RNA concentration for less than 5% isolation success was estimate to be 6.51 Log10 RNA/ml (95% CI:-4,11-5.40). H, Subgenomic viral RNA transcripts in relation to viral genomic RNA. Dots represent mean values of RT-PCR data obtained from at least two independent experiments on samples from individual patients. Plots show median values with interquartile ranges.

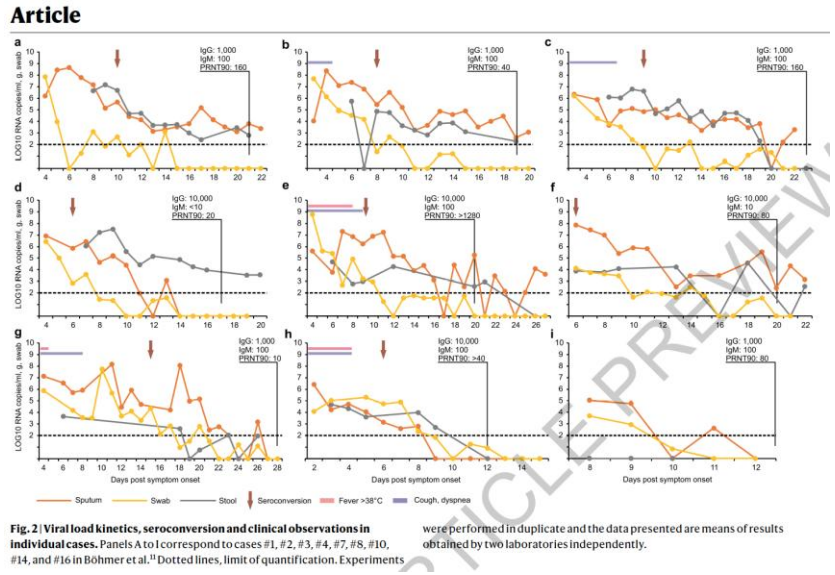

Fig. 2 | Viral load kinetics, seroconversion and clinical observations in individual cases. Panels A to I correspond to cases #1, #2, #3, #4, #7, #8, #10, #14, and #16 in Böhmer et al.[11] Dotted lines, limit of quantification. Experiments were performed in duplicate and the data presented are means of results obtained by two laboratories independently.

ARTICLE PREVIEW

Virological analysis of nine cases, providing proof of **active virus replication in upper respiratory tract tissues**. Pharyngeal virus shedding was **very high during the first week** of symptoms (peak at 7.11 × 10^8 RNA copies per throat swab, day 4). Infectious virus was readily isolated from throat- and lung-derived samples, **but not from stool samples**, in spite of high virus RNA concentration. **Blood and urine never yielded virus**. Active replication in the throat was confirmed by viral replicative RNA intermediates in throat samples. Sequence-distinct virus populations were consistently detected in throat and lung samples from the same patient, proving independent replication**. Shedding of viral RNA from sputum outlasted the end of symptoms**. **Seroconversion occurred after 7 days** in 50% of patients (14 days in all), but was not followed by a rapid decline in viral load.

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