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Salivary anti-spike antibodies associate with a decline in SARS-CoV2 burden.

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Abstract

SARS-CoV2 gains access to the body across mucosal surfaces, largely those of the upper respiratory tract including the oral cavity. Both innate and adaptive immunity at mucosa are likely to influence this process. The aims of this study were to determine whether antibodies in secretions might influence the SARS-CoV2 burden and thus possibly the severity of infection. Blood and stimulated whole mouth fluid samples (SWMF) were collected at the time of recruitment (day 0), and at 14, 30 and 90 days later from 80 COVID patients identified by positive nasopharyngeal swabs of SARS-CoV2 RT-PCR (N=80). Anti-SARS-CoV2 spike antibodies were detected by electro-chemiluminescence assay (ECLIA) using a Cobas e411 automated analyser (Roche, Germany). 92% of the patients had anti-SARS-CoV2 spike antibodies in the serum, but only 39% had detectable antibodies in the SWMF samples. Anti-SARS-CoV2 spike antibody levels in the SWMF samples, and the associated antibody secretion rates correlated significantly with those in serum. The same relationship was maintained at all the four time points. No patient was positive for SWMF if negative in serum. Antibodies in both fluids increased by day 14 and decreased by day 90. SARS-CoV2 RNA copies become negative by day 14 in most subjects. At day 14, 5/18 SWMF samples continued to be RT-PCR positive. In samples from both day 0 (n=80) and at day 14 (n=18), RNA copy numbers in SWMF were inversely proportional to both the salivary and serum anti-SARS-CoV2 antibody levels. Higher levels of anti-SARS-CoV2 spike antibodies in saliva were significantly associated with a more rapid decline in SARS-CoV2 burden. Taken together our data suggests a potential functional role for the anti-SARS-CoV2 spike antibodies in SWMF in reducing the SARS-CoV2 burden.

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Concise one sentence summary:

Few studies in COVID have studied mucosal antibodies and this research shows an inverse relationship between salivary antibodies and the SARS-CoV2 burden