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Investigating the microorganisms found in the mouths of SARS-Cov-2 positive patients

Submission date
21/04/2020

Recruitment status
No longer recruiting

Registration date
05/05/2020

Overall study status
Completed

Last Edited
05/10/2022

Condition category
Infections and Infestations

[X] Prospectively registered

[_] Protocol

[_] Statistical analysis plan

[X] Results

[_] Individual participant data

Plain English summary of protocol

Background and study aims
COVID-19 is a condition caused by the coronavirus (called SARS-CoV-2) that was first identified in late 2019. This virus can infect the respiratory (breathing) system. Some people do not have symptoms but can carry the virus and pass it on to others. People who have developed the condition may develop a fever and/or a continuous cough among other symptoms. This can develop into pneumonia. Pneumonia is a chest infection where the small air pockets of the lungs, called alveoli, fill with liquid and make it more difficult to breathe.

In 2020, the virus has spread to many countries around the world and neither a vaccine against the virus or specific treatment for COVID-19 has yet been developed. As of March 2020, it is advised that people minimize travel and social contact, and regularly wash their hands to reduce the spread of the virus.

Groups who are at a higher risk from infection with the virus, and therefore of developing COVID-19, include people aged over 70 years, people who have long-term health conditions (such as asthma or diabetes), people who have a weakened immune system and people who are pregnant. People in these groups, and people who might come into contact with them, can reduce this risk by following the up-to-date advice to reduce the spread of the virus.

The mortality rate of this disease appears highly variable – ranging from 1 to 10%, in relation to the various geographical regions. Also, the extent of the infection and the severity of the symptoms appear extremely variable, and there is no data on the possible associations between infection/symptomatology and individual microbiome so far.

Since the primary site of the SARS-Cov-2 infection is the nasopharynx, it is particularly interesting to characterize the oral microbiome (MO), in order to highlight any possible association between MO and development of the infection.

In addition, the alteration of taste and smell in patients infected with SARS-Cov-2 is a characteristic symptom and it is proposed as an additional discriminating indication at the time of diagnostic screening. It is proven that the MO contributes to the perception of taste, therefore a particular interaction between oral microbiota and SARS-Cov-2 virus may be possible.

Therefore, the study aims to characterize MO in infected, convalescent patients and in control healthy subjects matched by age and gender.

The researchers believe that the results of the study may be important in clarifying the role of the MO as a cofactor in the onset and development of the infection, opening up new screening, therapy, and prevention approaches.

Who can participate?
Adults over 18 years, who have received a reliable molecular diagnosis response for SARS-Cov-2 infection (positive/negative).

What does the study involve?
Patients with and without confirmed COVID-19 (SARS-CoV-2 infection) will attend up to four visits to have their oral microbiome sampled using an oral rinse.

What are the possible benefits and risks of participating?
Possible benefits include the clarification of the oral microbiome composition which could be useful to understand the host susceptibility and eventually remodulate the microbiome in order to render it more protective against the establishment of virus infection.
There is no risk in participating in the study, as no invasive analyses are scheduled.

Where is the study run from?
CIAS - University of Ferrara (Italy)

When is the study starting and how long is it expected to run for?
May2020 to October 2020

Who is funding the study?
Consorzio Futuro in Ricerca, CFR - University of Ferrara (Italy)

Who is the main contact?
Prof. Elisabetta Caselli, csb@unife.it

Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

Protocol serial number
CovOM

Study information

Scientific Title
Characterization of oral microbiome in SARS-Cov-2 positive patients and asymptomatic subjects: CovOM study

Acronym
CovOM

Study objectives
Primary objective is to characterize the oral microbiome in patients infected with SARS-Cov-2. Further evaluations will eventually identify any variation in oral microbiome along the time period of the infection (at molecular diagnosis time point, before any antibiotic treatment; during the hospitalization; after recovery). The presence and concentration of IgA anti-SARS-Cov-2 in the oral rinse of the participant positive to the virus will also be evaluated.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 21/04/2020, Central Ethics Committee of Emilia Romagna region (Segreteria Locale di Ferrara, Azienda Ospedaliero – Universitaria di Bologna, Via Albertoni, 15 – 40138 Bologna, Italy; +39 0532 236896; m.voci@ospfe.it), ref: 404/2020/Oss/Unife

Study design
Observational cohort mono-centre prospective study

Primary study design
Observational

Study type(s)
Screening

Health condition(s) or problem(s) studied
Oral Microbiome, COVID-19 (SARS-CoV-2 infection)

Interventions
This is an observational study, cohort prospective, 2 parallel arms [Cohort A: subject SARS-Cov-2 positive; Cohort B: subjects SARS-Cov-2 negative] involving an estimated minimum number of 20 participants. Every subject will be sampled at least once; it would be possible a maximum of 3 samples for the subjects assigned to Cohort A.

The data will be stratified according to cohort, age, gender, infection time. Admission into the study will be via rolling admission (estimated recruitment time: 6 months)
Each subject will follow the following treatment protocol:
Visit 0 – Screening, enrolment, cohort assignment: consent secure, screening; enrolment; baseline data recording, included anamnestic clinical condition at recruitment time and the result of the molecular diagnostic test for detecting SARS-Cov-2; Cohort assignment (Cohort A: molecular diagnosis for SARS-Cov-2 infection POSITIVE, valid also for patients already hospitalized in wards specifically identified by Azienda Ospedaleria Universitaria of Ferrara for SARS-Cov-2 syndrome treatment and convalescence; Cohort B: molecular diagnosis for SARS-Cov-2 infection NEGATIVE.
Visit 1 – Baseline sampling (Cohort A and Cohort B, mandatory), oral microbiome sampling with a non-invasive procedure (oral rinse – at diagnosis time).This visit can be performed immediately after Visit 0.
Visit 2 – Intermediate sampling (Cohort A, optional), oral microbiome sampling with a non-invasive procedure (oral rinse – between 0 and 14 days from molecular diagnosis);
Visit 3 – Late sampling (Cohort A, optional), oral microbiome sampling with a non-invasive procedure (oral rinse – after 14 days from molecular diagnosis and at least 7 days after the suspension of antibiotic treatment)
Visit 4 – Oral Cavity Assessment - Integration (Cohort A and Cohort B, optional),
A full mouth examination will be scheduled whenever it would be possible due to the current restrictions in order to prevent the spreading of SARS-Cov-2 infection.
All clinical assessment data will be recorded via hard copy CRFs. CRFs will be submitted to the microbiological testing site for entry into the statistical database. At the conclusion of the study, such statistical database will be submitted to the statistician for the preparation of the statistical analysis and the final study report.

Intervention Type
Other

Primary outcome(s)
Characterization of the microbial communities colonizing the oral cavity in patients infected by SARS-Cov-2 at visit 1 (baseline), 2 (0 - 14 days from diagnosis), 3 (at least 7 days after end of treatment). Methods include two types of molecular analyses for RNA and DNA: 1) Whole Genome Sequencing (WGS); 2) quantitative real-time PCR microarray.

Key secondary outcome(s))
At visit 1 (baseline), 2 (0 - 14 days from diagnosis), 3 (at least 7 days after end of treatment):
1. Presence and concentration of IgA and IgG anti-SARS-Cov-2 in the oral rinse of the participant positive to the virus will also be evaluated (CE ELISA test)
2. Concentration of pro-inflammatory cytokines (Multy-Analyte ELISArray test)

Completion date
01/10/2020

Eligibility

Key inclusion criteria
1. ≥ 18 years old;
2. Received a reliable molecular diagnosis response for SARS-Cov-2 infection (positive/negative)
3. Availability for the study duration (6 months)
4. Possibility to give consent to study participation (for written or verbal option)

Participant type(s)
Mixed

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 years

Sex
All

Key exclusion criteria
1. Current radiotherapy or chemotherapy
2. Unreliable molecular diagnosis response for SARS-Cov-2 infection
3. Impossibility to give consent to study participation (for written or verbal option)

Date of first enrolment
10/05/2020

Date of final enrolment
01/06/2020

Locations

Countries of recruitment
Italy

Study participating centre
Microbiology Section of the University of Ferrara
Via Luigi Borsari, 46
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44121

Study participating centre
Arcispedale Sant'Anna
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44124

Study participating centre
Section of Dentistry of the University of Ferrara
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Sponsor information

Organisation
University of Ferrara

ROR
https://ror.org/041zkgm14

Funder(s)

Funder type
University/education

Funder Name
Università degli Studi di Ferrara, Consorzio Futuro in Ricerca (CFR)

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analyzed during the current study during this study will be included in the subsequent results publication.

IPD sharing plan summary
Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		23/06/2021	05/10/2022	Yes	No