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Dynamics of the seroprevalence of SARS-CoV-2 antibodies among healthcare workers at a COVID-19 referral hospital in Milan, Italy

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introduction

- Since its appearance in Wuhan (PRC) in December 2019, SARS-CoV-2 has quickly spread to the rest of the globe.
- February 20th: first Italian case.
- Lombardy was hardly hit during the so-called «first wave».
- Healthcare workers may have a higher risk of acquiring and transmitting the infection.

A Massive Reorganization

- Bricolage figura 1

Aim of the study

- To evaluate the dynamics of the seroprevalence of SARS-CoV-2 antibodies in a cohort of HCWs working at LSUH during the first three months of the COVID-19 epidemic.
- To determine the factors associated with an increased risk of SARS-COV-2-seroconversion.

Healthcare workers and Methods

- Single center, cohort study (ma analisi al 2 punto come cross-sectional).
- LSUH is a referral center for ID in Northern Italy.
- Evaluation period: February 21 → May 27.
- The whole hospital personnel was invited to take part in the study on a voluntary basis.
- Three serum samples in three consecutive months (march-april-may 2020) along with three standardized questionnaires.
- Informed consent was acquired. The study was approved by the Hospital Ethical Committee.

Pt.2

- Test used: Wantai SARS-CoV-2 Total Ab ELISA, detecting antibodies binding to SARS-COV-2 spike-protein domain (RBD).
- Internal validation: sn 78%, sp 100%.
- Estimates of SARS-CoV-2 seroprevalence were adjusted for the diagnostic performance of the test using the sensitivity and specificity values obtained from internal validation.
- Univariate and multivariable logistic regression analyses evaluated the odds of seroconverting between two consecutive SARS-Cov-2 antibody tests.
- SAS version 9.4 software, differences with p values of <0.05 were considered statistically significant.

Our cohort

- 679 healthcare workers: median age 45 yo, 76% women, 36% nurses.
- Tabella 1 tagliata

Seroprevalence curve

- Figura 2 con numeri

Factors associated with the risk of seroconversion

- Yes: family contacts, previous symptoms
- No: work in a COVID19 ward (no difference between negative pressure rooms and other).

Discussion

- At the beginning of our study, no hospital-driven serosurvey had yet been implemented. We only analyzed the sera in June 2020.
- Of the 29 positive HCW, 13 were asymptomatic and had not performed a nasopharyngeal swab.
- We observed a lower seroprevalence in our Hospital than reported in previous studies in Lombardy (ref): adequate training? Continuous PPE supply?
- Working in a COVID19 ward was not associated with increased risk of seroconversion.

Limitations and Perspectives

- Not randomized
- Voluntary basis: difficult follow-up during the peak of the crisis.

- New serosurvey ongoing. Check for vaccine-induced immunity.

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