



Clinical and Immunological responses of asymptomatic SARS-CoV-2 patients

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Summary

Methods

- The study was conducted in Chongqing University China
- RT-PCR for SARS-CoV-2 was performed for 2088 close contacts under quarantine
- 178 were positive of whom 60 positive people claimed no symptoms in the preceding 14 days. Of these, 17 had mild or atypical symptoms and 6 others developed symptoms after admission.
- Finally, 37 asymptomatic cases were included in the study.
- Proportion of patients with asymptomatic infection was 20.8% (37/178 SARS CoV-2 confirmed)
- Virus specific IgM and IgG antibody detection and cytokine measurements were done.

Results:

- On admission, chest CT showed focal ground glass opacities in 1 asymptomatic person and diffuse consolidation in 10. Another 5 people developed CT abnormalities within five days after admission. One-third of affected people had abnormalities in both lungs.
- Asymptomatic cases shed the virus for a median of 19 days (15-26 days), which was significantly longer than symptomatic patients ($p=0.028$)
- 81% of symptomatic group tested positive for IgG versus 84% of symptomatic group at 3-4 weeks after exposure.
- IgG antibody levels in asymptomatic were significantly lower than in symptomatic group ($p=0.005$)
- At 8 weeks after discharge, more asymptomatic individuals were seronegative for IgG antibodies than symptomatic patients (40% versus 13%)
- Neutralizing antibodies level was also significantly decreased in asymptomatic (81%) versus symptomatic group (62%)
- Asymptomatic cases had lower levels of 18 pro- and anti-inflammatory cytokines

Conclusion

- CT abnormalities were detected in a number of asymptomatic people with SARS-CoV-2 infection
- Median duration of viral shedding was longer in asymptomatic than symptomatic group
- Asymptomatic individuals mounted a weaker immune response to SARS-CoV-2 infection
- IgG levels and neutralizing antibodies start to decrease in 2-3 months in high proportion of infected individuals (greater reduction in asymptomatic than symptomatic)

Appraisal:

- Strength
 - First study demonstrating CT abnormalities, and characterising the temporal course of antibody and immune responses in asymptomatic cases with SARS-CoV-2 infection
- Weakness
 - Data from Chinese population with relatively small number of cases
 - Other clinical or laboratory parameters in asymptomatic cases were not studied
 - Virus viability was not assessed by culture methods, thus longer viral shedding in asymptomatic could not be correlated with its transmission potential

Opinion:

This study has important public health implications and shows the risk of using COVID-19 'immunity passport'. Since immunological responses may vary among different ethnic groups, such temporal seroprevalence surveys in the community are required in different populations.

Appraisers:

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