

The effect of social distancing on the risk of hospitalization caused by pneumonia of patients who have been diagnosed with bronchiectasis

Researchers

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Background

Bronchiectasis is a chronic lung disease that earlier has been perceived as an orphan disease, but which today is being diagnosed to an increasing degree all over the world [1]. Clinically, the disease is characterized as having a cyclic course that involves chronic coughing, increased mucus production and which probably can lead to recurrent bronchial infection and obstruction of the airway, the latter which is comparable with what is to be seen in COPD [2]. Radiologically is to be seen an abnormal enlargement of one or multiple airways upon diagnosis of bronchiectasis. This will lead to an increased accumulation of mucus in the dilated airways which will cause the area to be more exposed to infection [3].

Bronchiectasis is often seen in connection to cystic fibrosis (CF). The reasons to non-CF bronchiectasis may be genetic immunodeficiencies, certain auto-immune diseases, in relation to

other lung diseases and in 20-40 % it is an idiopathic bronchiectasis [4].

After the diagnosis with bronchiectasis the aim with the treatment is to reduce symptoms and the risk of infections (exacerbations) [5].

For the time being the procedure is to break the vicious circle of mucus accumulating and infections in the airways by improving the drainage of mucus, limit and prevent bacterial colonization of the airways and reduce inflammation in the airways [5].

Globally, there is no systematic data on the effect of social distancing on the risk of hospitalization due to pneumonia on this group of patients. In the Winter and Spring 2020 social distancing was imposed in almost all countries in order to prevent the spreading of COVID-19. In Denmark social distancing was imposed on March 12th 2020. Precisely because a part of the treatment strategy is to avoid new bacterial infections and exacerbations it is interesting whether social distancing has an effect on infections in relation to bronchiectasis that require hospitalization.

Social distancing in Denmark.

Lockdown [6].	
March 12 th	The government introduced a number of measures to fight infection with COVID-19 in the community.
March 13 th	All pupils and students in all public youth education and further education programme were send home. All public employee, who did not perform critical functions, were send home. In addition, all indoor public cultural institutions, libraries and the like were closed from March 13 th and gatherings including over 100 people were banned.
March 16 th	All schools and day care centers were closed.

March 23 th	Gatherings over 10 people were banned. All restaurants, café's, night clubs, bars, gyms and malls were included in the lockdown. [7].
Re-opening fase April 1 st – 6 th .	The government found it safe to begin a gradual reopening of Denmark. [8].
April 15 th	Day care centers, public school (0.-5. grade) and graduate students in public youth educations were allowed back at school.
April 20 th	A number of liberal professions like hairdressers, dentists, private hospitals/clinic, psychologist etc. reopened. [8].
Reopening fase May 2 – 7 th	
May 11 th	Malls, retail and outdoor sports were allowed to open again. [8]
May 18 th	Restaurants, cafes, pubs and bars were opened. All students in the public school could return to their normal school attendance.
May 27 th	All youth and adult education and public research activities with a requirement for physical presence were allowed permission to open [8].

With the legislation in hand the police have enforced injunctions and occasionally given out penalties [9].

Aim

The purpose of this study is to investigate whether social distancing, implemented during COVID-19 is useful to prevent to prevent pneumonia hospitalization or death in bronchiectasis patients.

Hypotheses

A "Social distancing intervention", like the one implemented in Denmark 12th 2020, leads to decreased risk of pneumonia hospitalization or death in bronchiectasis patients.

Method:

Study design: Retrospective cohort study

Study population: Danish patients with following diagnose code either as an A- or B-diagnose bronchiectasis.

Diagnose code: DJ479

Patients are linked by personal ID (CPR) with the LPR (Landspatientregisteret, LPR2 and LPR3), which holds information on all admissions to Danish hospitals with diagnose codes according to International Classification of Diseases, 10th revision (ICD-10, fra 1994).

Study period

March 12th 2020 – May 20th compared with March 12th 2019 – May 20th 2019.

And

January 1st 2020 - March 11th 2020 compared with March 12th 2020 – May 20th 2020

January 1st 2020 - March 11th 2020 compared with January 1st 2019 - March 11th 2019

Inclusion criteria

- Age \geq 18 years
- Diagnosis of bronchiectasis

Exclusion criteria

- Diagnosis of Covid-19

Outcomes:

- Hospitalization with an ICD-10 diagnosis pneumonia (ICD 10 DJ12-18)

Statistical analysis

For the main analysis we will compare the incidence rate of pneumonia hospitalization on a weekly basis between 2019 and 2020 from week 1 to 21. Further the incidence rate ratio of pneumonia hospitalization will be calculated from week 11 to 21; the period after implementation of social distancing.

The secondary analysis is a cox proportional hazard model evaluating the risk of pneumonia hospitalization, counting death as a competing risk, comparing the intervention period (March 12th 2020 - May 20th 2020) with the previous year

Statistiske analyser bliver udført vha. SAS 9.4 (SAS Institute Inc., Cary, NC, USA).

Ethical statement

The study has been approved by the Danish Data Protection Agency. In Denmark, retrospective use of register data does not require ethical approval or patient consent.

This protocol will be web published on www.coptrin.dk

References

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