



RESEARCH

INFORMATION

Does bronchiectasis affect women and men differently?



AIMS

- To determine if bronchiectasis affects women and men differently

We think that more women than men are affected by bronchiectasis, a severe chronic lung disease. We aimed to collect data on a large group of patients with bronchiectasis and, along with colleagues across the world, examine the characteristics of women and men with Bronchiectasis to identify differences.

- To discover if proteins linked to sex hormones play a role in the differences?

We discovered a protein in the sputum of patients with bronchiectasis that had never been seen there before – Pregnancy Zone Protein. This protein is related to female hormonal state, we wondered if learning more about it could help explain the excess of women with bronchiectasis



KEY FINDINGS

- We studied data from over 13,000 patients with bronchiectasis across the world in the largest study of this condition that has ever been performed
- We found there are indeed more women than men with bronchiectasis in almost every country in Europe and Australia
- Men, however, have more severe disease.
- Men and women express the perceived quality of life differently with women experiencing more social and emotional impacts of the disease.
- Pregnancy Zone protein is a newly discovered neutrophil protein released during chronic inflammation – It is related to infections in both men and women





WHAT DID THE STUDY INVOLVE?

This study involved the collection of data on over 13,000 patients with Bronchiectasis from 29 countries. The EMBARC registry is a European register for people with bronchiectasis that contains a large amount of data on patients with this disease. We compared men and women enrolled into this database to get a comprehensive view of how the disease affects both sexes.

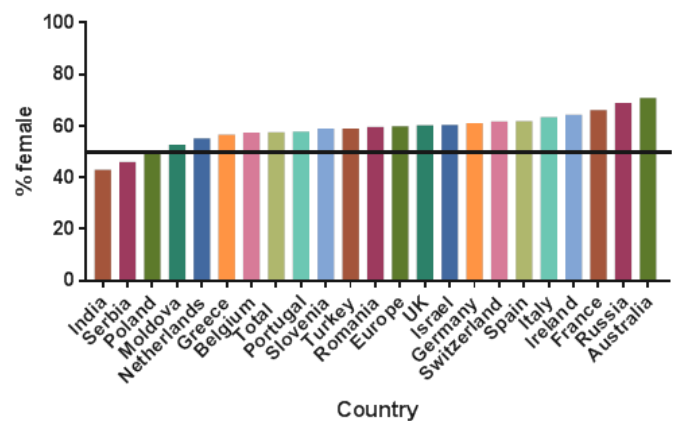
We performed a further study of patients in Tayside with bronchiectasis, collecting blood and sputum samples as well as performing experiments in the laboratory to look at inflammation and infection in the lungs and to compare these between men and women.



WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

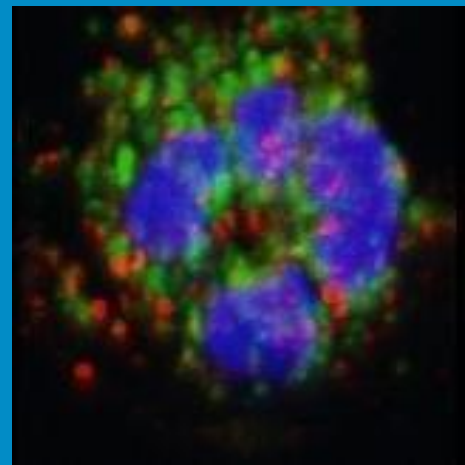
Women outnumber men with Bronchiectasis in most countries in Europe. Men and women have different causes of Bronchiectasis with more COPD or TB related disease in men and more Connective Tissue or Post-infective related disease in Women. However Men have more severe disease.

Pregnancy Zone Protein is high in the sputum of patients with bronchiectasis and this level is related to disease severity. It is released from Neutrophils as they try to kill bacteria with Neutrophil Extracellular Traps. Pregnancy zone protein may be a new target for treatment of the disease in both men and women.



Pregnancy Zone Protein (red patches in this image) is found within Neutrophils – a type of white blood cell associated with inflammation. It is released by these cells whilst they try to fight the chronic infection in the lungs of patients with bronchiectasis.

This protein suppresses the immune system. Scientists believe that finding this protein could open up new ways to treat bronchiectasis and other lung conditions.





WHAT IMPACT COULD THE FINDINGS HAVE?

- Men and women have different types of disease and also experience this differently
 - Men and women receive different levels of care.
 - Consideration should be taken to ensure both sexes are investigated and treated equally
- Further guidelines should recognise the differences between Men and women with bronchiectasis and tailor treatment to their individual needs.
- Pregnancy Zone Protein is a new finding which has helped in our understanding of chronic inflammation and could represent a target to develop new treatments.



HOW WILL THE OUTCOMES BE DISSEMINATED?

These results have been presented as posters and spoken presentations at conferences in the UK, Europe and USA.

They have been published in the American Journal of Respiratory and Critical Care Medicine and CHEST, with a further paper planned in the coming year.



CONCLUSION

The sex disparity in bronchiectasis is a real phenomenon. There are important differences in the aetiology, disease severity and types of infection in bronchiectasis between sexes. Treatment guidelines should consider these differences.

Pregnancy Zone protein is a novel finding of a neutrophil protein released during chronic inflammation associated with a damaging immune response called neutrophil extracellular trap formation. The development of drugs to target this process is already underway.



RESEARCH TEAM & CONTACT

**Simon Finch, Amelia Shoemark,
James D Chalmers**



Divison of Molecular and Clinical Medicine,
Ninewells Hospital and Medical School,
University of Dundee, DD1 9SY



s.finch@Dundee.ac.uk
a.shoemark@Dundee.ac.uk
j.chalmers@Dundee.ac.uk



01382 383000

Additional Information

CSO funded a clinical academic fellowship for Simon Finch between 2017 and 2020