

# Study of severe asthma using CT scans

EurekAlert

A new study led by University of Leicester researchers at Glenfield Hospital suggests that CT scans may be the way forward for monitoring progression of severe asthma as well as checking how it is responding to treatment.

CT scans, a series of X-ray images of the body, are usually used to detect tumours but the Leicester study, points to their use in asthma. Preliminary results from the study will be showcased at the University of Leicester's Festival of Postgraduate Research on 24 June.

Dr Sumit Gupta, a postgraduate student at the University of Leicester, along with his colleagues at the Institute for Lung Health and Radiology Department at Glenfield Hospital, is investigating the use of Computed Tomography (CT) scanning to assess structural changes in lungs and airways of patients with severe asthma.

Professor Chris Brightling and Dr James Entwisle are supervising this work which is part funded by The Wellcome Trust.

Their findings suggest that CT derived measures of structural changes may potentially be used as a non-invasive 'marker' in asthma to monitor disease progression and response to current and novel treatment.

Dr Gupta said: "Asthma is a major health problem affecting 300 million people worldwide. Approximately half a million people in UK suffer from severe asthma and are, as a consequence, at increased risk of asthma attacks, hospitalization and death and often have severely impaired quality of life. Structural changes that occur in airways of asthmatic individuals remain difficult to quantify and monitor. Computed tomography (CT) scans have now emerged as a non-invasive research tool to assess these airway structural changes. "

Professor Brightling, a Wellcome Trust Senior Clinical Fellow and Honorary Consultant at the Institute for lung Health, who is leading this study, said: "Currently, there is paucity of markers that can be used to monitor asthma progression, response to treatment and to identify patients who will have recurrent asthma attacks and develop persistent airflow obstruction, features particularly relevant to severe asthma."

Dr Gupta and colleagues have demonstrated that CT assessed airway dimensions are associated with worsening of lung functions and airway inflammation. They also observed a reduction in the airway wall thickness along with reduction in asthma attacks amongst severe asthma patients, whose airway inflammation was suppressed by novel therapy, targeting specific type of inflammation. CT scanning therefore may assist in monitoring asthma progression and response to treatment.

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Professor Brightling added: "Ability to objectively quantify different structural changes in asthma using CT may assist in differentiating various disease sub-types and help deliver personalised healthcare."

This research work therefore highlights the importance of CT scanning in severe asthma patients and its potential use as a non-invasive 'marker' for monitoring of the disease. This research work was recently showcased in House of Commons during the 'SET for Britain' event. Dr Gupta was the only University of Leicester representative in biomedical sciences at the event.

Dr Gupta is also a radiology speciality trainee at East Midlands Healthcare Workforce Deanery. Fifteen abstracts have been accepted to date for presentation of different aspects of his research work at various international respiratory and radiology meetings. Dr Gupta has five peer reviewed publications in leading medical journals. He was awarded a travel bursary for presenting his research work at European Congress of Radiology 2009 by The Royal College of Radiologists, UK.

The research is being presented to the public at the University of Leicester on June 24. The Festival of Postgraduate Research introduces employers and the public to the next generation of innovators and cutting-edge researchers, and gives postgraduate researchers the opportunity to explain the real world implications of their research to a wide ranging audience.

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