**Vitamin D Deficiency Linked with Severe Asthma**

Children with severe therapy-resistant asthma (STRA) may have poorer lung function and worse symptoms compared to children with moderate asthma, due to lower levels of vitamin D in their blood, according to a study by researchers at King’s College London.  
  
The team found that lower levels of vitamin D may cause structural changes in the airway smooth muscles of children with STRA, making breathing more difficult.

This study, published in the American Journal of Respiratory and Critical Care Medicine, provides important new evidence for possible treatments.  
  
The study was carried out by researchers from the MRC & Asthma UK Centre in Allergic Mechanisms of Asthma at King’s, The Royal Brompton Hospital and the National Heart and Lung Institute (NHLI) at Imperial College London.

The scientists say the findings will help develop new treatment strategies for children suffering from difficult-to-treat asthma, who account for up to ten per cent of young asthma patients.  
  
While most children with asthma can be successfully treated with low doses of corticosteroids, about five to ten percent of asthmatic children do not respond to standard treatment.

Children with STRA experience more asthma episodes and asthma-related illnesses, and require more healthcare services than their treatment-receptive peers.  
  
Previous studies of children with difficult asthma have linked increases in airway smooth muscle mass with poorer lung function and studies have established a connection between levels of vitamin D and the airway smooth muscle.

But this is the first time the relationship between vitamin D and the pathophysiology of children with STRA has been evaluated.  
  
The researchers enrolled 86 children in the study, including 36 children with STRA, 26 with moderate asthma and 24 non-asthmatic controls, and measured the relationships between vitamin D levels and lung function, medication usage and symptom exacerbations.

Children requiring complex bronchoscopies for the study, were treated in the paediatric intensive care unit at Royal Brompton.

The researchers also examined tissue samples from the airways of the STRA group to evaluate structural changes in the airway’s smooth muscle.  
  
The team found children with STRA had significantly lower levels of vitamin D, as well as greater numbers of exacerbations, increased use of asthma medications and poorer lung function compared to children with moderate asthma and non-asthmatic children.

Airway muscle tissue mass was also increased in the STRA group.  
  
Lead author, Dr Atul Gupta, said: ‘This study clearly demonstrates that low levels of vitamin D are associated with poorer lung function, increased use of medication, worse symptoms and an increase in the mass of airway smooth muscle in children with STRA.  
  
‘It is therefore plausible that the link between airway smooth muscle mass and lung function in severe asthma may be partly explained by low levels of vitamin D.  
  
‘Our results suggest that detecting vitamin D deficiency in children with STRA, and then treating that deficiency, may help prevent or reduce the structural changes that occur in the airway smooth muscle, which in turn may help reduce asthma-related symptoms and improve overall lung function.

‘Hopefully, the results of this and future studies will help determine a new course of therapy that will be effective in treating these children.’

However, the researchers cautioned that children should not be given vitamin D supplements without first consulting a GP.

They emphasised that this is an early study, and larger studies will need to be conducted to verify these results.