

asthma control and serum 25 (OH) Vitamin D levels. Regardless of whether the child was on supplements or not, we wanted to see if low serum level was associated with suboptimal control.

- Our study enrolled only those with good compliance and technique as mentioned in the methodology, and the comorbidities were also noted. Though more children in whom asthma was not well-controlled had allergic rhinitis (68% vs 41%), the difference was not statistically significant ( $P > 0.05$ ).
- Though recommended, pulmonary function test is not being done routinely in our pediatric asthma patients.

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## Clinical Characteristics of Tracheomalacia in Infants

We read with interest the study by Vijayasekaran, *et al.* [1] in recent issue of *Indian Pediatrics*. We must congratulate the authors who presented their experience on such a difficult area of pediatrics. However, we have few concerns related to this article:

- Authors mentioned that the basis for the diagnosis of tracheomalacia in this study was >50% reduction of airway lumen due to collapsing of anterior tracheal wall against the posterior wall. Although there is no accepted diagnostic criteria for the trachea-bronchomalacia, a luminal collapse of >25% is considered as significant and children with more than >50% of luminal collapse are usually symptomatic [2]. If authors had considered >25% luminal collapse as the basis of diagnosis, they could have diagnosed more children with tracheomalacia.
- Gastroesophageal reflux (GER) is commonly associated abnormality with trachea-bronchomalacia which could be responsible for recurrent or persistent respiratory symptoms such as wheezing, stridor, cough and aspiration pneumonia. Furthermore, GER itself can also lead to trachea-bronchomalacia and studies have shown that treatment of GER may lead to improvement in trachea-bronchomalacia [3]. The association of GER in trachea-bronchomalacia varies from 25-70% in different series [3,4]. In this study, authors did not provide any information about association of GER with

tracheomalacia, which might have been helpful in making treatment decision.

- Bronchoalveolar lavage (BAL) is an important part of bronchoscopy in pediatrics, especially when there are recurrent or persistent respiratory symptoms. In this study, many children had pneumonia, lung collapse and wheezing. Although authors have provided information about associated radiographic and echocardiography findings, they did not mention BAL findings in this study.
- Although, most often tracheomalacia is a self-limiting condition [5], authors could have shared treatment strategy and outcome in this series for the benefit of the general pediatrician.

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### AUTHOR'S REPLY

The readers' interest in our article deserves appreciation as the questions raised by them provide us an opportunity to clarify common issues related to the management of tracheomalacia [1].

Regarding diagnostic criteria for the tracheobronchomalacia, a recently published article categorizes, the entrapment of tracheal diameter of  $\geq 1/3$  in expiratory phase as slight, the entrapment  $\geq 1/2$  as moderate, and  $\geq 4/5$  as severe airway malacia [2]. While formulating the study protocol, we considered tracheal collapse  $> 1/2$  (50%) as the inclusion criteria to increase the validity of diagnosis.

Ours was a retrospective study and the study population included cases referred from various centers. As gastroesophageal reflux (GER) is also otherwise common among infants, this information was not collected in the study. Bronchoalveolar lavage (BAL) is one of the useful investigations done with a bronchoscope. We did not include BAL findings with our report because of the need for brevity.

In congenital airway malacias, due to defective cartilage support, the contour of airways is maintained by the bronchial smooth muscle. Such infants when presenting with wheeze may not improve with beta-agonist nebulization. At times the wheeze worsens due to a reduction in the muscle tone caused by beta-agonists where semisynthetic anticholinergics may help. Appropriate antibiotics, ipratropium nebulization, chest physiotherapy, and noninvasive ventilation may improve the morbidity of the affected infants. Tracheomalacia is often self-limited and will resolve or become asymptomatic by the second year of life without intervention [3].

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