178: Living in Farming Communities (FC) Provides Children Greater Protection Against Asthma Attacks than Living in Poor Hygienic Conditions (PHC).

Sur[1], S. Chitranshi[2], S. Ganesh[3], R. Moona[3], M. Sharma[3], S. Bajpai[3], S. K. Katiyar[4];

[1]University TX Medical Branch, Galveston, TX, [2]RAMA Hospital, Kanpur, INDIA, [3]Indian Institute of Technology, Kanpur, INDIA, [4]GSVM Medical College, Kanpur, INDIA.

ABSTRACT

•Rationale: There are at least two major theories of the hygiene hypothesis, animals and infections. According to the "animal theory", children exposed to animals early in life such as those living in FC or those who have dogs as pets are also protected from later asthma. According to the "infection theory", children exposed to infections such as tuberculosis, hepatitis A, recurrent URI or parasitic infections such as those living in PHC are protected from later asthma. Here we test which of these two groups are more effectively protected from asthma attacks.

•Methods: India offers a unique geographic area to test this question because prevalence rates of asthma are 3-5-fold lower in India than in highly developed countries. The current study was conducted in and around Kanpur, a large city in Northern India. Children age 6-18 living since birth in FC (n=305) were compared to children living since birth in PHC inner city neighborhoods (n=296). A team of social workers conducted a door to door survey of these areas using a modified ISAAC2 questionnaire, and recorded height and weight.

•Results: The overall asthma attack rates based on prevalence of wheeze (mild asthma) or whistle (severe asthma) were 2-fold higher in PHC children (FC=2.3%, PHC=4.7%). Severe asthma attacks occurred 7-times more frequently in PHC children (FC=0.3%, PHC=2.4%). However, age adjusted height and weight of children living in these two communities were identical, indicating similar nutritional status.

•Conclusions: Living in FC provides children greater protection against asthma attacks than living in PHC. This protection is independent of nutritional status.

INTRODUCTION

There are at least two major theories of the hygiene hypothesis of asthma, exposure to animals and exposure to infections. According to the "animal exposure theory", children exposed to animals early in life such as those living in FC or those who have dogs as pets early in life are protected from later asthma. According to the "infection theory", children exposed to infections such as tuberculosis, hepatitis A, recurrent URI or parasitic infections such as those living in PHC are protected from later asthma. Here we test which of these two groups are more effectively protected from asthma attacks.

India offers a unique geographic area to test this question because prevalence rates of asthma are 3-5-fold lower in India than in highly developed countries.

OBJECTIVES

To test whether living since birth in farming community (FC) or in poor hygienic conditions (PHC) provides greater protection from asthma attacks.

METHODS

A four phase study is planned.

Phase I: The current study was conducted in and around Kanpur, a large city in Northern India. All studies were approved by UTMB IRB in the US and Indian Institute of Technology Kanpur IRB in India. A team of social workers conducted a door to door survey of children between the ages of 6 and 18 living in FC and PH. A modified ISAAC2 questionnaire was used. Height and weight were measured and recorded. A total of 305 children living since birth in FC were compared to 296 children living since birth in PHC.

RESULTS

Figure 1: Children standing in PHC

Figure 2: Children standing in FC

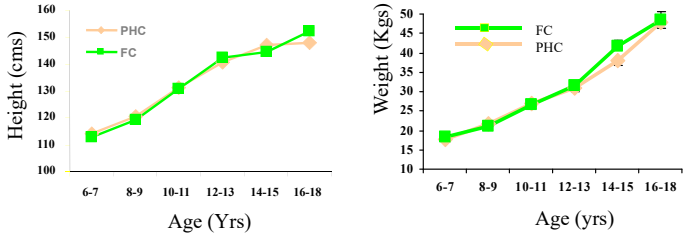

Figure 3: Height and weight of children are identical

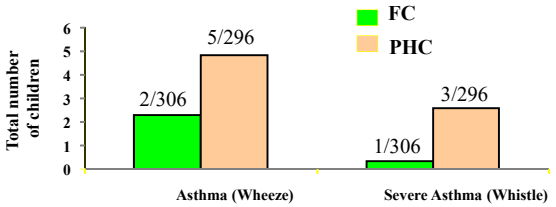

Figure 4: Children living in FC have lower wheeze and whistle rates than children living in PHC

CONCLUSION

•Living in FC provides greater 2-fold greater protection from wheezing (mild asthma) and 7-fold greater from whistling symptoms (severe asthma)

•Alternatively, living in PHC may expose children to specific risk factors that induce asthma

•These differences are not due to lack of growth in children living in PHC

FUTURE STUDIES PLANNED

•Phase II: Conduct allergy testing, have physician examine patient, and obtain samples from subjects

•Phase III: Conduct molecular laboratory tests on patient samples

•Phase IV: Analyze laboratory data and correlate with data from Phase I, II and III.