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Association of Dyslipidemia and Pulmonary Function in Asthmatic Children

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Introduction

Dyslipidemia contribute to the development of a pro-inflammatory state that could worsen asthma.

We would like to investigate whether this systemic inflammation could affect pulmonary function in asthmatic children with dyslipidemia.

Materials and Methods

Asthmatic children aged 6 – 18 years old were enrolled.

Spirometry, forced oscillation technique (FOT), fractional exhaled nitric oxide (FENO) and alveolar nitric oxide (NO) were performed.

Blood lipid profiles were measured in fasting blood samples.

Of 100 asthmatic children dyslipidemia was demonstrated as follow:

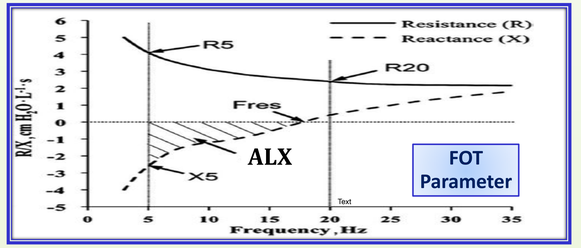
- High Cholesterol N = 23
- High Triglyceride N = 14
- High LDL-C N = 27
- Low HDL-C N = 11

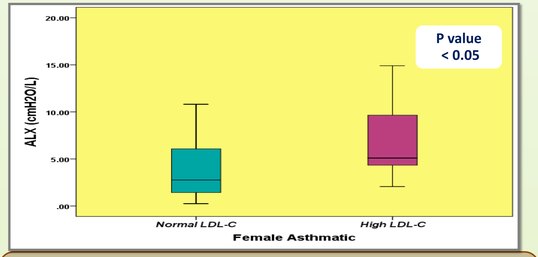
Demographic Characteristics of Study Subjects

Patient features	N = 100 subjects
Age (y), mean (SD)	12. 2 (3.5)
Male	60
BMI(kg/m2), mean (SD)	21.6 (5.8)
%BMI, median (25%-75%IQR)	77 (17,96)
Allergic comorbidity	
AR	98%
AD	7%
Food Allergy	9%
Family of allergic disease	
Farther	78%
Mother	68%
Sibling	20%
Atopic Asthma	77%
Age onset of asthma: year median (25%-75%IQR)	4 (3,7)
PACT score (SD)	23 (2.5)
PAQLQ score (SD)	6.5 (0.6)

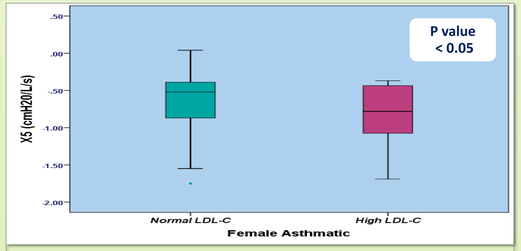
Result

There were no significant differences in the value of spirometry, FOT, FENO and NO between subjects with dyslipidemia and subjects with normal lipid profile.





Box plot graphical represent, female asthmatic children had mean value of ALX significantly higher than the asthmatic children with normal LDL-C



Box plot graphical represent, female asthmatic children had mean value of X5 significantly higher than the asthmatic children with normal LDL-C

Subgroup Analysis: Female Asthmatic Children

FOT parameter	High LDL-C: [LDL ≥ 130 mg/dL] (N = 11)	Normal LDL-C: [LDL < 130 mg/dL] (N = 29)	P value
ALX; area of reactance [cmH_2O/L] Median (25-75%IQR)	5.1 (3.97, 10.65)	2.76 (1.43, 6.24)	0.034
X5; reactance at 5 Hz [$cmH_2O/L/s$] Median (25-75%IQR)	- 1.04 (-1.57, -0.77)	- 0.69 (-1.19,-0.43)	0.034

Interestingly, subgroup analysis has demonstrated that female asthmatic children with high LDL-C had a significant higher value of ALX (area of reactance) and X5 (reactance at 5 Hz) than that of the asthmatic children with normal LDL-C

Conclusion

- Female asthmatic children with high LDL-C had a greater value of ALX and X5.
- The pro-inflammatory effect of lipid in asthma may have sex prevalence and resulting in changes in the peripheral airways.

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