

Relationship between quality of life and disordered physiology and cytology in asthma: a retrospective study from a secondary care centre

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Introduction

Asthma is a growing burden in terms of morbidity, health care costs and health-related quality of life (HRQL) (Weiss KB et al, 1992). In recent decades measures of health-related quality of life in asthma have become important indicators alongside objective clinical indicators (Upton et al, 2016). As a result, international guidelines for the treatment of asthma have evolved to include the improvement of patients’ health-related quality of life by maintaining long-term control of the disease, minimizing symptoms and improving physical, psychological and social function (Jae Ho Chung et al, 2017).

Understanding asthma-related quality of life is very important for understanding the disease and its treatment. Indeed, it provides important information about the impact of the disease and treatment on health as perceived by the patient (Sullivan et al., 2013).

Objectives

To our knowledge, no studies have explored the impact of the main airway inflammatory parameters of asthma (sputum eosinophils and neutrophils) on asthma-related quality of life.

As a consequence, we have taken advantage of our large asthma clinic database to first explore the relationship between both inflammatory and physiological parameters of asthma (objective clinical indicators) and asthma-related quality of life (subjective indicator).

Second, we compared asthma-related quality of life between three groups of asthmatics (mild, moderate and severe).



Main Finding

In our study, asthma related quality of life deteriorates as airflow limitation and sputum eosinophils increase. Because of its impact on health-related quality of life, it seems essential to consider the eosinophilic inflammatory component, in addition to airflow limitation, in asthma management.

However, these results need to be nuanced, as the relationship between asthma-related quality of life and physiological and cytological parameters has only been demonstrated by univariate analyses. In this regard, we plan to go further by performing mutivariate analyses to see if the relationship described is still valid or is due to other factors

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Methods

We conducted a retrospective cross-sectionnal study in a large population of asthmatics recruited from a University secondary care centre between 2010 and 2019 (N= 1337). Patients completed Mini-asthma quality of life questionnaire (Mini-AQLQ) (Juinper et al, 1999) and underwent spirometry and sputum induction. A disease severity classification was determined by the combination of the alteration of physiological and cytological variables. Group 1 (n=304) included mild asthmatics with FEV1 > 80 % of predicated values, sputum eosinophils <3% and sputum neutrophils < 76%. Group 2 (n=81) included moderate asthmatics with FEV1 between 60% and 80% and sputum eosinophils between 3% and 20% or sputum neutrophils between 76% and 90%. Group 3 (n=72) included severe asthmatics with FEV1 <60% and sputum eosinophils > 20% or sputum neutrophils > 90%.

The exploration of the relationships between asthma-related quality of life and physiological and cytological parameters was based on univariate analyses. The comparison between the 3 groups of asthmatics on the value of the AQLQ was carried out on the basis of an ANOVA

Results

- For the whole cohort (N=1337), AQLQ reached on average 4,5 ranging from 1,07 to 7 (Fig.1).

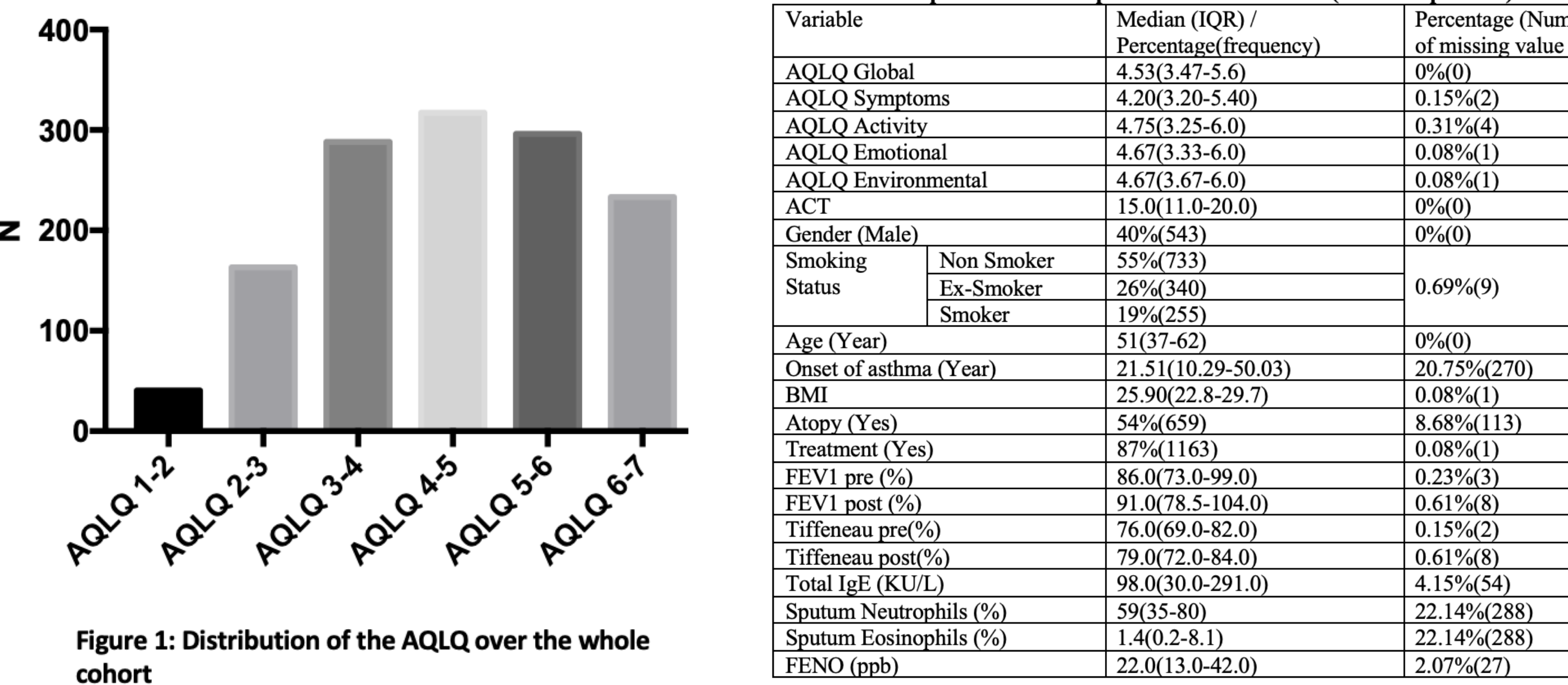


Figure 1: Distribution of the AQLQ over the whole cohort

- AQLQ was correlated with FEV1 (rs=0,33 ; p <0,001) and with sputum eosinophils (rs=-0,14 ; p< 0,001) but not with sputum neutrophils (rs=-0,001 ; p = 0,76).
- There was a progressive and significant decline in mean AQLQ from group 1 to group 3. Mean (± SEM) AQLQ was 4,8 (±0,07), 4 (± 0,14) and 3,5 (± 0,13) in group 1, 2 and 3 respectively. (Fig. 2).

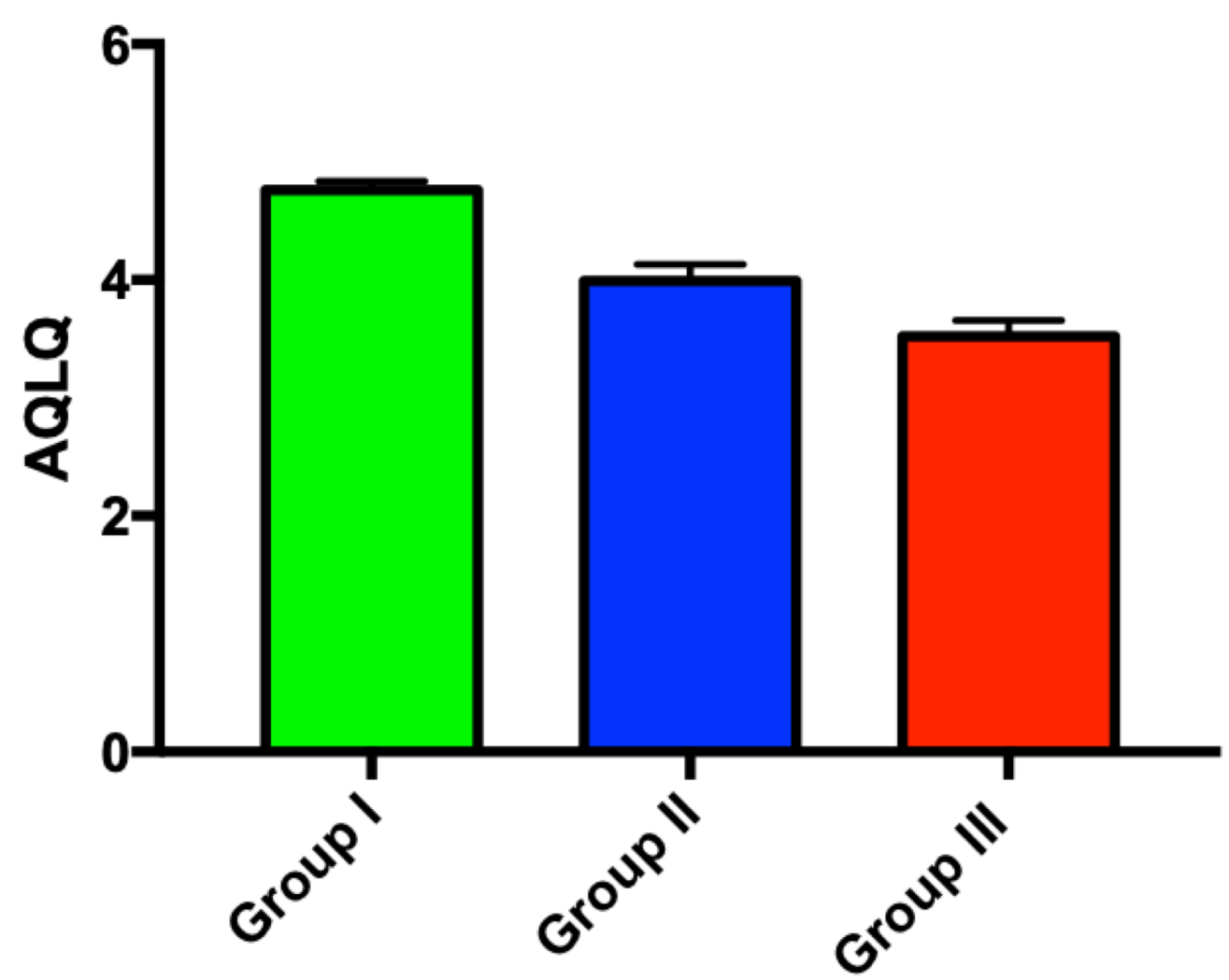


Figure 2: comparison of AQLQ averages between the 3 asthma groups