Journal of Psychiatric Research 59 (2014) 179–188

Contents lists available at ScienceDirect

Journal of Psychiatric Research

journal homepage: www.elsevier.com/locate/psychires

Association between mental disorders and subsequent adult onset asthma

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http://dx.doi.org/10.1016/j.jpsychires.2014.09.007

ARTICLE INFO

Article history:
Received 22 January 2014
Received in revised form
18 July 2014
Accepted 5 September 2014

Keywords:
Asthma
Mental disorders
Population
Epidemiology
Chronic disease
Comorbidity

ABSTRACT

Background and objectives: Associations between asthma and anxiety and mood disorders are well established, but little is known about their temporal sequence. We examined associations between a wide range of DSM-IV mental disorders with adult onset of asthma and whether observed associations remain after mental comorbidity adjustments.

Methods: During face-to-face household surveys in community-dwelling adults (n = 52,095) of 19 countries, the WHO Composite International Diagnostic Interview retrospectively assessed lifetime prevalence and age at onset of 16 DSM-IV mental disorders. Asthma was assessed by self-report of physician's diagnosis together with age of onset. Survival analyses estimated associations between first onset of mental disorders and subsequent adult onset asthma, without and with comorbidity adjustment.

Results: 1860 adult onset (21 years+) asthma cases were identified, representing a total of 2,096,486 person-years of follow up. After adjustment for comorbid mental disorders several mental disorders were associated with subsequent adult asthma onset: bipolar (OR = 1.8; 95%CI 1.3–2.5), panic (OR = 1.4; 95%CI 1.0–2.0), generalized anxiety (OR = 1.3; 95%CI 1.1–1.7), specific phobia (OR = 1.3; 95%CI 1.1–1.6); post-traumatic stress (OR = 1.5; 95%CI 1.1–1.9); binge eating (OR = 1.8; 95%CI 1.2–2.9) and alcohol abuse (OR = 1.5; 95%CI 1.1–2.0). Mental comorbidity linearly increased the association with adult asthma. The association with subsequent asthma was stronger for mental disorders with an early onset (before age 21).

Conclusions: A wide range of temporally prior mental disorders are significantly associated with subsequent onset of asthma in adulthood. The extent to which asthma can be avoided or improved among those with early mental disorders deserves study.

1. Introduction

Asthma is a major public health problem because a lifetime course and an increasing prevalence (Jenkins et al. 1994; Pearce et al., 2000). An association between asthma and some mental disorders, in particular, anxiety and depression has been shown (Goodwin et al. 2003a, 2004; Perna et al. 1997; Shavitt et al. 1992); (Opolski and Wilson, 2005; Toren et al. 2006). While some of the previous evidence was based in small number of countries, recent data have extended similar results to a large number of countries; (Jiang et al. 2013; Wong et al. 2013).

Most of the studies showing an association between asthma and mental disorders were cross-sectional in nature, thus limiting their ability to infer the temporal relationship between asthma and mental disorders. Several longitudinal studies suggest that asthma in childhood is followed by some subsequent internalizing mental disorders (Alati et al. 2005; Goodwin et al. 2013; Ramos Olazagasti et al., 2012) and with suicidal ideation and suicide attempts (Goodwin and Eaton, 2005). On the other hand, a number of studies have shown a longitudinal association between psychological distress and atopic disorders, mostly asthma, both in children and adults (Chida et al. 2008; Sanna et al. 2014).

Only very few of these studies included comprehensive diagnostic measures of mental disorders (i.e., based on standard psychiatric diagnostic criteria such as the Diagnostic Statistical Manual (DSM)) for mood and anxiety (Hasler et al. 2005; Wainwright et al. 2007); and eating disorders (Goodwin et al. 2009; Scott et al. 2007, 2008). An additional limitation of previous research is that the influence of mental comorbidity in the association of mental disorders and asthma has not been analyzed in depth. Knowing whether anxiety or depression specifically is associated with asthma (after adjusting for comorbidity with the other) can guide research focused on the mechanisms underlying the association with asthma.

We previously reported, based on a large international study including many mental disorders, that there was a concurrent association between 12-month mental disorders and lifetime asthma in many countries, regardless of the important variation in asthma prevalence in these countries (Scott et al. 2008). Associations were similar for anxiety, mood and alcohol abuse disorders. In those analyses we did not assess the effect of mental comorbidity and our focus was on associations between current mental disorders and asthma, rather than on associations between temporally prior mental disorders and subsequent onset of asthma. We therefore undertook analyses that considered the sequential order of the mental disorders and asthma comorbidity and reported that early onset (i.e., before age 21) mental disorders predicted subsequent onset of diagnosed adult onset asthma (i.e., after age 21), even after adjusting for childhood adversities, smoking and other relevant variables (Scott et al. 2008). However in these analyses, we included a limited set of mental disorders and we did not adjust for mental disorder comorbidity. Nor did we examine whether the association held true for mental disorders starting after the age of 21 and subsequent adult asthma. Therefore, we could not determine whether the associations found between early onset and subsequent asthma were reflecting the onset timing of these disorders (i.e., that they occur at critical developmental periods) or were because early disorders are a risk marker for comorbidity.

1.1. Aims of the study

In this study we analyzed only asthma cases with onset in adulthoods (21 + years of age), as we wanted to test the antecedent model (Scott, 2009) of mental disorders preceding asthma onset. This model suggests that mental disorders that start early in life and are chronic or recurrent, may have physiological effects akin to chronic stress, leading to Hypothalamus-Pituitary-Adrenal (HPA) dysregulation (Chida et al., 2008; Scott, 2009). This altered physiological stress response in turn has been associated with immune system dysfunction and increased inflammatory response. These mechanisms could facilitate asthma onset among susceptible individuals, along with the lifestyle risk factors also associated with mental disorders. By selecting only adult-onset asthma cases and conducting survival analyses based on person years only up to asthma diagnosis, this allowed us to investigate this specific temporal sequence from mental disorder to asthma diagnosis, albeit with the limitation of retrospective data. We did not include childhood asthma as it would be difficult for respondents to clearly recall the temporal priority of mental disorders and asthma symptoms.