Editorial of GARD Section

War-time asthma: lessons from Syria

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Asthma is one of the most common chronic conditions worldwide, and although its prevalence varies from a country to another, its related morbidity and mortality also varies according to many factors, including environmental and socioeconomic issues (1).

Persistent care gaps have been observed in asthma management, even in countries with adequate resources and accessible facilities such as specialized centers, complete lung function laboratories and easily accessible education centers, but these deficiencies are particularly common in underserved countries, particularly in the presence of insufficient financial and human resources, or during troubled sociopolitical times (2-4).

In response to an obvious need to optimize treatment of many conditions, particularly chronic diseases, clinical practice guidelines and various practice support tools such as statements or clinical strategies have been developed. One of those is the internationally recognized Global Initiative for Asthma (GINA), initially developed under the umbrella of the American NHLBI and the World Health Organisation (5). GINA not only offers recommendations for cutting edge best asthma care but also suggests possible strategies for countries with limited resources and unfavorable conditions. However, even so, such disease management may be difficult to apply in certain circumstances and additional data are needed to better understand how some situations such as social conflicts and war could affect individuals with respiratory diseases in order to help improve their situation. In too many places in the modern world however, optimal asthma management, as proposed by current guidelines, is indeed a goal difficult to achieve, often due to socioeconomic issues, inadequate patient support, insufficient health care givers knowledge or available resources.

One of the most difficult situations however is certainly health care in countries at war. In these conflicts, acute care needs are so overwhelming that chronic diseases managements may seem of less importance. However, these last can worsen markedly in many people affected by these conflicts.

Previous publications have dealt mostly with the effects of war-time use of chemicals or stress on respiratory condition of soldiers. Increases in new-onset asthma has been previously observed in soldiers serving in Iraq or Afghanistan, as reported by Szema *et al.* although the causes of such increases remain to be studied (6). Another publication on soldiers taking part to the first Gulf War, following Iraq invasion of Kuwait, also reported an increased incidence of asthma, particularly in those with the highest stress exposure, suggesting an involvement of psychological factors, among many others (7).

However, there have been few studies on disease management and asthma control in civil populations affected by war. For many of these people, shelter or dwelling conditions often affect their physical and mental health (8,9). These situations could be particularly difficult for chronic conditions such as asthma.

In the report by Mohammad *et al.*, we get additional insight about asthma patients suffering from troubled living conditions and psychological stress related to war (10). Using questionnaires, they documented asthma control, quality of life, and the many factors affecting those last, in patients 5 years and older with diagnosed asthma, living in the Al-Herjalleh shelter in Damascus, Syria. This study showed no significant increase in prevalence of new onset

asthma in the shelter population, being estimated at about 8.5%, but there was a universal increase in asthma symptoms and reduction in health-related quality of life. Indeed, in close to 70% of them, asthma had worsened and almost all patients reported poorer quality of life since entering the shelter. Furthermore, in the non-asthma group, 44.2% of participants reported episodes of wheezing, coughing and breathlessness at night, suggesting underlying undiagnosed asthma that could have been revealed by these poorer environmental and psychological conditions although new onset asthma cannot be excluded. However, these last were indeed considered as having possibly "under-diagnosed asthma", as they previous had symptoms suggesting asthma but no formal diagnosis. They also had a higher prevalence of allergic rhinitis, which could have contributed to their respiratory symptoms or suggest possible underlying mild airway hyperresponsiveness in the context of atopy. Surprisingly, the incidence of severe asthma attacks did not seem to change, although this could be at least in part explained by the fact that almost half of them used oral corticosteroids as a rescue medication.

The observed worsening of asthma can be associated with many war-related factors. First, the proportion of individuals using daily inhaled corticosteroids (ICS) was only 4.3%, compared to 30.6% in the past, suggesting that underuse was already present but drastically worsened during the stay in the shelter. Difficulties in obtaining such medications and very low daily income were certainly in large part responsible for this.

Another possible factor identified is the increased exposure to environmental triggers such as dusts, chemicals and weapons, second-hand smoke, cooking fumes and detergents. It is impressive but not surprising to note that active smoking markedly increased in the shelter (from 34.7% to 51.7%), despite the known untoward consequences of smoking on asthma.

Furthermore, in many, psychological stress and particularly the post-traumatic stress disorder (PTSD) could have contributed, predominant in under-diagnosed asthma, with a prevalence of 35.1% compared to 15.7% in asthmatic patients, although the PTSD pattern was similar. The influence of PTSD on asthma remains uncertain but many participants who had this condition saw a worsening of their asthma. Rosenberg *et al.* showed that there is compelling evidence for a link between chronic psychosocial stress and the onset and course of asthma (11). Alterations in neuroendocrine pathways, as well as immunologic mechanisms, are likely to be involved in these effects, and specific signal transduction pathways through which stress modulates epigenetic and transcriptional activity in asthma-relevant cells have been suggested.

Finally, caregivers assessment of asthma control and treatment needs could have been insufficient, being overwhelmed by so many health problems and few resources in these difficult conditions.

Patients included in the study had self-reported asthma, which may question the possibility that some had other conditions such as cough from upper airways conditions or chronic obstructive pulmonary disease (COPD). Nevertheless, respiratory symptoms increased in a majority of them and lung function abnormalities were documented. In this regard, the demonstration of a significant component of irreversible airway obstruction post-bronchodilator in many patients suggests either poor asthma control, COPD or asthma-COPD overlap. For these two last, long-acting bronchodilators are preferred with or without ICS, depending of the most likely diagnosis.

The authors highlight the need for asthma programs in such shelters to help minimize undesirable effects of this environment on asthma. Following a report of these observations to health authorities, support to this population, including distribution of ICS inhalers, was initiated. Such initiatives should be promoted for patients suffering from those difficult conditions.

Finally, long-term consequences of these traumatic experiences remain to be studied. For example, how such physical and psychological stress influence to course of asthma on the long run remain to be analyzed. As it was shown that prenatal stress may to promote the development of asthma in the child to be born, the prevalence of asthma in children born during or shortly after the war or following migration to other countries should be studied (12).

In the meantime, specific programs to better assess and help managing respiratory conditions such as asthma should be promoted.

In conclusion, the report by Mohammad *et al.* sheds more light on consequences of war-time shelter conditions and crowding on diseases such as asthma. It suggests the urgency to pay particular attention to these specific populations in order to offer support programs.

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Footnote

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References

1. Pearce N, Ait-Khaled N, Beasley R, et al. Worldwide trends in the prevalence of asthma symptoms: phase III of the International Study of Asthma and Allergies in Childhood (ISAAC). Thorax 2007;62:758-66.
2. Boulet LP, Bourbeau J, Skomro R, et al. Major care gaps in asthma, sleep and chronic obstructive pulmonary disease: a road map for knowledge translation. Can Respir J 2013;20:265-9.
3. Desalu OO, Onyedum CC, Adeoti AO, et al. Unmet needs in asthma treatment in a resource-limited setting: findings from the survey of adult asthma patients and their physicians in Nigeria. Pan Afr Med J 2013;16:20.
4. Cruz ÁA, Stelmach R, Ponte EV. Asthma prevalence and severity in low-resource communities. Curr Opin Allergy Clin Immunol 2017;17:188-93.
5. Reddel HK, Bateman ED, Becker A, et al. A summary of the new GINA strategy: a roadmap to asthma control. Eur Respir J 2015;46:622-39.
6. Szema AM, Peters MC, Weissinger KM, et al. New-onset asthma among soldiers serving in Iraq and Afghanistan. Allergy Asthma Proc 2010;31:67-71.
7. Wright RJ, Fay ME, Suglia SF, et al. War-related stressors are associated with asthma risk among older Kuwaitis following the 1990 Iraqi invasion and occupation. J Epidemiol Community Health 2010;64:630-5.
8. Kolwaite AR, Hlady WG, Simon MC, et al. Assessing functional needs sheltering in Pike County, Kentucky: using a community assessment for public health emergency response. Disaster Med Public Health Prep 2013;7:597-602.
9. Ohkouchi S, Shibuya R, Yanai M, et al. Deterioration in regional health status after the acute phase of a great disaster: respiratory physicians' experiences of the Great East Japan Earthquake. Respir Investig 2013;51:50-5.
10. Mohammad Y, Rafea S, Latifeh Y, et al. Uncontrolled and Under-Diagnosed Asthma in a Damascus Shelter during the Syrian Crisis. J Thorac Dis 2017;9:3415-24.
11. Rosenberg SL, Miller GE, Brehm JM, et al. Stress and asthma: novel insights on genetic, epigenetic, and immunologic mechanisms. J Allergy Clin Immunol 2014;134:1009-15.
12. Heinrich J. Can prenatal maternal stress increase the risk of asthma? Expert Rev Respir Med 2015;9:379-81.

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