Asthma – The Silent Pandemic

Far from being a mild condition, asthma can prove potentially fatal

by Dr Sneh Khemka, Medical Director, Bupa International

The word ‘pandemic’ has, in the last few weeks, been uttered from thousands of lips the world over and the media frenzy over swine flu has kept our collective public health attention firmly focused on viruses.

But what we are perhaps quick to overlook are other diseases that are sweeping the globe in a silent but deadly pandemic of their own, one of the most important of which is asthma.

A mild disease?

In many people’s minds, asthma is a mild condition that requires nothing more than a couple of puffs on an inhaler to keep it under control. However, in a doctor’s mind, asthma is a condition that can cripple and kill.

Seeing someone having an asthma attack, or even worse having one yourself, is a truly frightening experience. The staring, desperate eyes of the patient as they fight to get some air into their lungs, their sucked-in chest and pale blue lips and the overwhelming feeling of impending doom all combine to make it an occasion not to be repeated.

As a junior, I remember a particular incident where I was paged to the emergency room to admit an otherwise fit young man in his mid-twenties. He had been playing football that afternoon, and even an hour after stopping, he was still finding it difficult to catch his breath.

When I saw him first, I didn’t think much of it – some rest, a whiff of oxygen and a couple of puffs on a stronger inhaler ought to do the trick. But when, 30 minutes later, his oxygen saturation was dropping and he was finding it difficult to talk to me, I realised that all was not well.

What happened over the next ten minutes shocked me to the core – his situation changed to critical and I had to summon the resuscitation team. We cannulated him, gave him intravenous medications, forced oxygen into his lungs and gave him other drugs to increase the strength of his breathing. But despite all of this, his oxygen levels dropped so low that his heart stopped. We defibrillated him with cardiac shocks and put a tube in his throat to mechanically ventilate him, and transferred him to the Intensive Care Unit. He survived and made a full recovery, leaving hospital just three days later.

Fortunately, this situation only happens to the unlucky few. Awareness and better medical
management of the disease means that such dramatic attacks are few and far between. But asthma, as a condition, is on the rise, and fast.

**A Silent Pandemic**

It’s estimated that 300 million people have asthma worldwide. But it is expected that by 2030 that figure will have risen to 400 million. In some countries, the rate of increase has been such that for every one child diagnosed with asthma in 1999, two children are diagnosed in 2009. And more importantly, last year asthma killed over a quarter of a million people around the world.

These significant increases in the prevalence of the disease are causing widespread economic and health burdens to communities where these burdens did not previously exist, and is changing the health landscape significantly in urbanised areas where the disease is more common.

Research shows an almost 30-fold variation in asthma levels between different countries, with more urban, ‘westernised’ nations tending to have the most cases. The highest levels of asthma exist in the UK, New Zealand, Australia, Republic of Ireland and the USA. The lowest are found in some Eastern European countries, Indonesia, Greece, China, Taiwan, India and Ethiopia.

But why is there such a difference between countries? And why is asthma growing at all? Well, the medical community doesn’t really know the answers to all of these questions, but there have been several theories put forward.

**What is asthma?**

Asthma is an inflammatory condition of the airways, where the lining of the air passages become inflamed. Asthma episodes occur when these airways contract, causing the characteristic ‘wheeziness’ and tightness of chest associated with the condition. The airways are narrower, and it is harder to both breathe in and out and to exchange fresh oxygen for ‘old’ carbon dioxide. It is often triggered by things that irritate the lining of the lungs. This might include air pollution, pollen, or dust mites. However, other factors, such as exercise, or even changes in the weather, may prompt an episode.

Asthma is often considered an allergic disease. It’s more common in families who have allergies. And the huge rise in asthma has also gone hand in hand with big increases in two allergic diseases – hay fever and eczema. So, what could have prompted this swell in allergies over the past four decades?

**Theories behind the pandemic**

Theories abound as to what has caused this significant and sustained rise, and most of them are related to how our patterns of life have changed, including where we choose to live, what we choose to eat, and the lifestyles we choose to adopt.
Diet

One such theory centres around dietary change. As the 20th century progressed, the diet in English speaking ‘westernised’ countries has come to contain less and less fruit and vegetables. At the same time asthma rates have risen in the same places. Could they be related?

Well, the link between diet and asthma is far from proven, but some studies do at least suggest an association. For example, one piece of research showed that eating foods containing vitamin E was linked with lower asthma rates. Another found decreased levels of asthma among fish eaters. Another unconfirmed theory to explain the rise of asthma centres around intestinal microflora. Intestinal microflora are the millions of bacteria that naturally grow inside the digestive tract. Some researchers think that differences in intestinal microflora may play a role in the risk of developing allergic disease by affecting the immune system. One idea is that the rise in antibiotic use may have affected microflora, prompting a rise in allergic illnesses.

Smoking

Another obvious risk arises from smoking. Smoking amongst adults is not thought to cause asthma; it causes a range of other lung diseases, notably Chronic Obstructive Pulmonary Disease and Emphysema – often misdiagnosed as asthma. However, what is well established is that if a pregnant mother continues to smoke, her child is significantly more likely to smoke.

Pollution

The jury is out on whether pollution causes asthma. We do know that higher rates of pollution can trigger asthma attacks if the person already has the condition, but whether it can actually cause the condition is debatable.

The fact that asthma is on the increase mostly in urbanised areas suggests that pollution may be partly to blame. This is corroborated by studies in monkeys that were exposed to higher levels of pollutants, who then developed the signs of asthma.

However, this is confounded by the fact that rates of asthma are much higher in areas that have been officially certified as having clean air – perhaps only a marker of greater affluence and access to diagnosis?

The hygiene hypothesis

In 1989, a researcher called Professor David Strachan came up with one of the most well known ideas to explain asthma trends – the ‘hygiene hypothesis’. His idea rests on the concept that allergic diseases such as asthma, hay fever and eczema can be prevented by catching viral infections in early childhood.

Professor Strachan suggested that as general household standards and personal hygiene improved throughout the 20th century, children were exposed to fewer viral infections, and that
this caused more allergic conditions.

Although it isn’t known exactly why this might happen, researchers think that early infections might modulate the immune system in some way to prevent allergies developing.

The hygiene hypothesis was based, in part, upon the observation that allergic diseases are less common in larger families, less affluent families. Children born with a later birth order are also less likely to have allergic illnesses. Professor Strachan suggested that families with multiple children are more likely to share infections, leading to lower rates of asthma.

The idea of early exposure affecting allergies fits with another finding about asthma: according to some studies children who grow up with pets are less likely to develop it. Early exposure to ‘allergens’ from cats and dogs, for example their hair or skin cells, may be responsible.

Studies also indicate that growing up in a family on a farm lowers the risk of asthma. Exposure to allergens from animals or from chemicals or pesticides on the farm may be responsible. Alternatively, growing up on a farm could put you at greater risk of viral infection, so reducing your risk of asthma.

**Newer theories**

New postulations as to the rise of asthma come up almost daily. Amongst the more established are:

- Having your child by Caesarian Section
- A presence of smokers in the household
- Use of non-steroidal anti-inflammatory drugs

And less established are:

- The use of paracetamol
- The use of margarine instead of butter
- The use of mobile phones!

**Challenges for the future**

The rise in asthma and allergies remains a puzzling conundrum for the medical and scientific community. While looking at trends around the world helps to shed some light on the mystery, we can’t explain it yet.
However, what we do know is that asthma affects more and more of us in everyday life. Increasing numbers of parents will have their child diagnosed with the condition, and parts of the world that were traditionally protected from this disease are now exposed.

The economic and health burden this places on medical communities and health organisations on a global scale adds to the challenges that we already face, and we need to understand the causes better before we can really tackle them.

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