

Pigeon Breeders' Lung

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It began innocently enough. You had cleaned the loft and exercised and fed the birds late one afternoon, as usual. Ventilation in the loft was pretty good, you thought, and as a result, there wasn't much dust raised while you scraped. Afterward, you felt fine except for a very slight chest pain when you breathed, but you weren't concerned because you thought you might just have pulled a small muscle in the wall of your chest. All seemed relatively well, virtually normal. Later, by mid-evening the coughing began and you had some difficulty breathing and an unexplained general ill feeling. Your face was flushed and you felt excessively warm. Then the chills and shivering began. You couldn't get warm, even though it was a pleasant summer evening. 'Flu, you thought, so your wife made you a hot drink and you went to bed to "sweat it off". You had a bad sleepless night, with more coughing which made your chest hurt, along with shaking, chills and fever. Over the next 48 hours, you began to improve. In the meantime, you hadn't been near the loft at all but had called a friend who looked after the birds for you. As your symptoms subsided, you began to feel better, so one morning several days later, you decided once again to look after the birds yourself. Toward noon, the symptoms you had experienced previously began to return with a vengeance, and once again you were confined to bed with aching, cough, chills and fever. This had never happened to you before. Two bouts of 'flu in a few days? Not likely. What was this condition?

One of the possible serious health consequences for a small number of fanciers closely associated with the management of pigeons can be the development of an allergy-based medical condition centred in the lungs. Fortunately, for the vast majority of us, this is not a significant problem, but for those who are sensitive, it can be a very critical problem indeed.

This disease is one of a group of conditions known broadly as extrinsic allergic alveolitis (extrinsic = arriving from outside the body; allergic = increased or abnormal sensitivity to substances in the environment; alveolitis (pronounced al-vee-oh-litis) = inflammation centred on the microscopic area of the lungs called alveoli where the exchange of oxygen from the air, and carbon dioxide from the bloodstream, occurs). This disease is NOT an infection but is what is described as a hypersensitivity pneumonitis. In other words, it is inflammation that is centred in the lungs and induced by an excessive sensitivity to one of several provoking substances in the environment. Hypersensitivity pneumonitis doesn't describe one condition but is a phrase used to describe a number of factors that cause similar damaging effects in the lungs.

Included in the causes of this abnormal sensitivity are variously, the inhalation of:

- a) spores of thermophilic (= heat-loving) bacteria,
- b) true fungi,
- c) animal proteins or
- d) bacterial products.

Examples of these ailments are:

- 1) Farmers' Lung which results from exposure of the lungs to material generated from harvested humid, warm hay that allows for the rapid proliferation of spores from certain thermophilic bacteria;

- 2) Pigeon Breeders' Lung (PBL), (also called Bird Fanciers' Disease when it involves other species of birds), which is provoked by exposure to proteins from the serum, droppings and feathers of birds;
- 3) Rodent Handlers' Disease caused by exposure to animal dander;
- 4) Humidifier or Air-conditioner Lung which is caused by thermophilic bacteria or amoeba, a tiny one-celled organism, in heated water reservoirs. In addition, included in this group of conditions there are
- 5) Mushroom Pickers' Lung,
- 6) Maple Bark Disease,
- 7) Duck Fever (from duck feathers), and
- 8) Byssinosis (from the Greek word "byssos", meaning "flax"), an occupational disease that is apparently induced in textile workers by inhalation of airborne fibres of cotton, linen and hemp.

In pigeon fanciers, PBL is associated with intense and often prolonged exposure to inhaled dusts in a loft environment — just the kind of exposure we fanciers face daily. Affected individuals have an abnormal sensitivity or heightened reactivity to their inhalation of proteins present in the serum, droppings and bloom from pigeons. To explain further, droppings contain proteins from disintegrated intestinal cells that are shed from the inner wall of the intestine as they age in a normal cycle. Bloom contains similar proteins from aging cells that are shed normally from the surface of the skin. The blood of pigeons also contains proteins that can also incite an attack of PBL in affected fanciers. Thus, the proteins in droppings and bloom are always present in the dusts we all breathe in a loft environment. While most of us don't react adversely to these proteins, some highly sensitive individuals do react vigorously and dramatically to this exposure. In affected fanciers, continued exposure over time results in progressively severe damage to the lungs in the form of scarring. In turn, scarring interferes with the normal exchange of oxygen and carbon dioxide and results in increased difficulty in breathing and reduced tolerance to exercise.

Signs of PBL in affected individuals are varied and usually appear four to six hours after loft dust is inhaled. Acute attacks following the inhalation of dusts containing the proteins that provoke the condition include recurring bouts of influenza-like signs such as chills, shaking, fever, very difficult breathing, chest pain, cough and an increased count of white blood cells in the bloodstream. Widespread or localized collections of inflammatory cells in the lungs can be seen on X-ray. Function tests of the lungs indicate an acute restrictive effect. Fortunately, avoiding pigeons, plus short-term treatment may well result in a resolving of symptoms and completely normal X-rays.

In a less acute form of the condition called the subacute form, there are unrelenting signs of lower respiratory symptoms that resemble bronchitis. In some studies, it was shown that avoiding contact with birds and/or treatment resulted in gradual improvements, with symptoms recurring when there was intense exposure to pigeons.

If exposure is continuous and prolonged, a chronic form of the disease develops, and is characterized by progressive respiratory failure, difficult breathing, cyanosis (blue discolouration of the skin that occurs because the blood is not getting enough oxygen), and a decrease in the total respiratory capacity of the lungs. It is important to realize that each new exposure of susceptible individuals to loft dust causes more damage to already damaged lungs.

The areas of the lung affected primarily by this condition are the alveoli. To explain, air is breathed through the nostrils or mouth, and passes into the trachea (windpipe). Within the chest, the trachea divides into two large tubes called major bronchi, one to each lung. These bronchi then subdivide

into smaller tubes called bronchioles, and then again into the even smaller respiratory bronchioles, and finally into alveoli. Alveoli are microscopic, blister or grape-like clusters of extremely thin-walled sacs. Blood flows through the walls of these very thin sacs in order to exchange oxygen from inhaled air for carbon dioxide, an end product of the life processes within all body cells. At the alveolar level, in the less acute to more chronic stages, there is a marked infiltration of white blood cells, scarring, and closure of bronchioles because of the inflammatory reaction.

In the diagnosis of PBL, along with a relevant history of exposure to pigeons or other birds, there can be a number of medical procedures involved, including direct assessment of the symptoms and examination of the chest by a physician, X-rays, plus specific breathing function tests conducted in a closed chamber to determine the total aerobic capacity of the lungs. Blood samples are taken for white blood cell counts, and also to determine the presence of any reaction to the offending proteins that trigger the condition.

In acute and subacute cases, short-term treatment usually includes the use of corticosteroids by mouth to decrease the intense inflammatory reaction. In more chronic cases, more frequent bursts of corticosteroids and/or long-term corticosteroid treatments may be given.

It is a continuing mystery, but nevertheless good news for most of us, as to why there is only a relatively small percentage of actual cases of PBL among those of us who are so commonly exposed to dust from pigeons on a daily basis. Possibly, in some affected individuals there is a genetic predisposition toward development of the condition. However, so far, genetic studies have not detected consistent differences between affected and non-affected individuals. In any case, it is a good idea for everyone with pigeons to be reasonably cautious about prolonged bouts of exposure to dust in lofts. For those affected by PBL, complete avoidance of the loft environment is probably the best practical approach in the prevention of attacks.

For affected fanciers who choose to continue active involvement in the sport, a proper fitting, medically-approved mask may be helpful. The common white or coloured mask held in place by a rubber band is not very good in completely preventing loft dust from entering the lower reaches of the lungs and should not be relied upon for long-term protection. Good ventilation in the loft, including floor grills and exhaust fans if necessary, is an important consideration to allow for better evacuation of the inciting dusts before suitably prepared, susceptible individuals enter the loft. Lofts that are closed in tightly with little or no movement of air are potential hazards to all fanciers who are exposed to these environmental conditions, and could be a basis for the development of PBL in susceptible individuals. Individuals who have PBL definitely should not enter such closed-in lofts.

Sometimes affected individuals are family members or friends who help out occasionally with loft chores. These individuals should not only avoid the loft environment, but also, the dust and bloom that can be carried on the clothing of those who are more closely involved with chores in the loft. If necessary, the clothing of fanciers working in the loft should be changed before there is any contact with any individual known to be susceptible. As an example, one of my veterinary colleagues whose two children were highly sensitive to animal dander, was forced to remove his work clothes, and shower in a room off the rear door of the house, then change into fresh clothes before he could be in the same room with these children. For pigeon fanciers, in a worst-case scenario, avoiding exposure to pigeons by affected individuals or members of their family, may well mean eventually having to face the challenge head-on, by giving up the birds. If you or others in your family develop the signs mentioned earlier, especially after



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exposure to dust from pigeons, from caged or aviary birds, domestic poultry, or the family dog or cat, etc., see your physician and describe the symptoms that occur following your exposure to these animals. Early detection, appropriate medication and the institution of protective measures can go a long way toward dealing effectively with this condition in affected individuals.