Medicine for Managers

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Amyloidosis

Amyloidosis is a serious group of diseases of which most people have never heard, which can cause damage in tissues and vital organs throughout the body. The incidence is thought to be about 2-4 per 100,000 people in the United Kingdom each year. Depending on the type of disease the symptoms can be very variable and some types may lead to life-threatening organ failure. A variety of treatments are used to treat or control symptoms.

The nature of the disease depends on an abnormality in body proteins. A protein molecule is simply a string of amino acids.

Like all molecules these proteins form a three-dimensional shape. In amyloidosis the shape is abnormal and the molecules form what is known as **a *beta-pleated sheet***. Different forms of the disease affect different proteins and different organs and tissues are involved.

The symptoms of amyloidosis are very variable and depend on the type, nature, severity and organs affected by the disease.

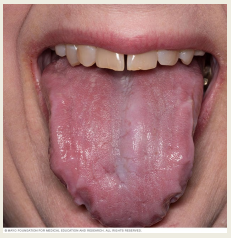
They may be localised or generalised. One form of the disease affects only the skin causing an irritating rash.

Most other forms are widespread causing systemic effects on a range of organs resulting in a variety of symptoms and leading to progressive organ failure.

The presenting features of amyloidosis are often insidious and diagnosis may be delayed because of their non-specific nature.

Symptoms include:

- Fatigue, weakness and breathlessness
- Numbness or tingling in hands and feet
- Ankle and leg swelling
- Bowel disturbances, possibly with bleeding and malabsorbtion
- Enlarged liver
- An enlarged tongue (macroglossia)



- Skin changes including thickening or bruising
- Purplish patches round the eyes

Amyloidosis is more commonly diagnosed in

men and often in the sixth decade of life. Some forms are hereditary and some are more common in people of African heritage.

The risk is increased if the individual has a chronic inflammatory disease or occasionally if undergoing renal dialysis.

Amyloidosis can damage areas of the heart which, in severe cases, can be life-threatening.

Deposits of protein in the kidneys may lead to failure and deposits in the nerves may cause symptoms such as tingling, numbness or pain and loss of some functional control. Ultimately it can result in multi-organ failure.

Over twenty types of amyloid protein have been identified.

The different types are named according to the nature of the abnormal protein, the distribution, age of sufferers or if the disease is hereditary.

The most common type occurs with the development of 'light chains' of protein, giving rise to the name

AL Amyloidosis (Abnormal Light Chain).

Because of the non-specific nature of the symptoms, making a diagnosis is often very difficult and, because of its relative rarity, it is frequently not included in the differential diagnosis.

It should be considered in any case of renal failure, diabetes, lymphoma, cancer (particularly if unconfirmed) and sarcoidosis.

Early diagnosis and appropriate treatment can help to minimise or prevent worsening organ damage.

Accurate diagnosis is important because there are a variety of treatments, which are dependent on the specific form of the disease.

Initial tests include a variety of laboratory blood tests which will not only detect any significant changes in the function of specific organs but which can be analysed for any abnormal protein which can indicate the presence of the disease. Investigation of the heart is important, especially if heart changes are identified clinically.

Routine electrocardiography (ECG) may raise suspicion and echocardiography is used to create video imaging to assess the operation of the heart.

Some types of amyloid are specific to the type of heart damage. Other tests include magnetic resonance imaging (MRI) using radio waves within a strong magnetic field to create detailed images of organs and tissues.

Nuclear imaging, using injected radioactive tracers can reveal heart and other organ damage and help differentiate between the different types of amyloidosis.

Amyloid ***cannot be cured***. However, treatment helps manage the symptoms, can influence or arrest the disease and limit production of amyloid protein. If the amyloidosis is triggered by another disease such as tuberculosis or

rheumatoid arthritis, treating the underlying condition may help control of the amyloid.

A variety of medications may be used to influence the protein production or the organ damage secondary to the disease.

Cardiac medication, such as heart rhythm or rate stabilisers, or anticoagulants will improve function and reduce clotting risk.

Cancer chemotherapy may inhibit growth of abnormal amyloid producing cells to arrest the disease.

There are also a range of targeted therapies which can interfere with faulty genes or stabilise the blood proteins to prevent them being transformed into amyloid deposits.

Other procedures include dialysis if the kidneys are damaged by amyloid to improve blood biochemistry.

Stem cell transplant may be considered, particularly in people whose disease is not advanced.

The procedure involves collecting and storing stem cells from the patient's blood, then treating with high dose chemotherapy, and finally returning the stem cells to the body to create new tissue. In some cases where organs are severely damaged, organ transplant may be considered, replacing the heart, kidney or liver.

The prognosis for people with amyloidosis is improving although some sufferers deteriorate and develop complications of the disease irrespective of any treatment that they might receive.
It is estimated that up to 80% of patients diagnosed with the disease die from it.

The National Amyloidosis Centre at the Royal Free Hospital NHS Foundation Trust has been at the cutting edge of treatment and research into all aspects of amyloidosis for more than 25 years and has identified and improved the management of the disease for patients throughout the United Kingdom.

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