CONDITION

Secondary systemic amyloidosis

Secondary systemic amyloidosis is a buildup of abnormal protein in organs caused by long-lasting inflammation.

WHAT IT IS
Abnormal protein deposits caused by long-lasting inflammation

BODY SYSTEM
Kidneys, digestive system, liver, spleen, and other organs

MAIN SYMPTOMS
Leg swelling, foamy urine, fatigue, diarrhea

WHAT CAUSES IT
Chronic inflammation from immune conditions or infection

HOW IT IS DIAGNOSED
Congo red biopsy with laboratory amyloid typing

MAIN TREATMENT
Control inflammation and support affected organs

CAN IT BE CURED?
Sometimes - inflammation control may reverse deposits

IS IT AN EMERGENCY?
Sometimes - chest pain, severe breathlessness, or fainting

LONG-TERM OUTLOOK
Better when inflammation is controlled before advanced organ damage

Overview

Secondary systemic amyloidosis is usually called AA amyloidosis . It develops when long-lasting inflammation causes an abnormal protein called amyloid to collect in tissues and organs.

During inflammation, the liver makes a protein called serum amyloid A , or SAA. If SAA stays high for a long time, fragments of it may form amyloid deposits. These deposits can interfere with how organs work.

The kidneys are affected most often. Amyloid may also collect in the liver, spleen, digestive system, thyroid, or adrenal glands. Heart involvement is less common than in some other types of amyloidosis.

AA amyloidosis is different from AL amyloidosis , which is caused by abnormal antibody-producing cells in the bone marrow. Identifying the type is essential because treatment is different.

The condition can be serious, but its course is not the same for everyone. Controlling the inflammation that drives SAA production can slow or stop new deposits. In some people, existing deposits decrease over time and organ function improves. Established organ damage may not fully recover.

Symptoms

AA amyloidosis often develops gradually. Early symptoms may come from the underlying inflammatory condition rather than from amyloid itself.

Kidney involvement can cause protein to leak into the urine. You may not notice this at first, and it may only appear on a urine test. Larger protein losses can lead to:

Some people develop nephrotic syndrome , meaning heavy protein loss in the urine together with low blood protein and swelling. Kidney function may also decline, allowing waste and fluid to build up.

Amyloid in the digestive system can cause diarrhea, constipation, nausea, abdominal discomfort, poor absorption of nutrients, or unplanned weight loss. These symptoms have many possible causes, so they do not show by themselves that amyloid is present.

The liver or spleen may become enlarged, although this may not cause symptoms. Less commonly, deposits can affect hormone-producing glands or other organs.

Symptoms such as fatigue and weight loss may also be caused by ongoing inflammation, infection, anemia, medication effects, or another condition. Medical testing is needed to find the cause.

- Foamy or frothy urine
- Swelling around the ankles, legs, or eyes
- Unexplained weight gain from retained fluid
- Tiredness or reduced appetite

Causes and risk factors

AA amyloidosis is a complication of persistent inflammation. It is not caused by diet, stress, or

something you did.

Conditions associated with prolonged inflammation include rheumatoid arthritis, juvenile idiopathic arthritis, inflammatory bowel disease, and chronic inflammatory skin or joint conditions. Inherited autoinflammatory conditions, such as familial Mediterranean fever, can also keep SAA levels high.

Long-lasting infections can sometimes cause AA amyloidosis. The specific infections involved differ between people and regions and may include persistent infections of bones, lungs, or other tissues.

Not everyone with chronic inflammation develops amyloidosis. Risk is influenced by how strong and persistent the inflammation is, how well it is controlled, and individual biological or genetic factors.

Sometimes the source of inflammation is not immediately clear. Further assessment may be needed to look for an inflammatory condition, chronic infection, or inherited autoinflammatory disorder.

AA amyloidosis itself is not contagious. Most cases are not directly inherited. However, an underlying condition that raises the risk, such as familial Mediterranean fever, can be inherited.

Diagnosis

Diagnosis involves confirming that amyloid is present, identifying its exact type, and checking which organs are affected.

Blood and urine tests may show protein loss, reduced kidney function, inflammation, anemia, or changes in liver function. Measurements of C-reactive protein, or CRP, and sometimes SAA help assess ongoing inflammation. These tests can support the diagnosis, but they do not confirm amyloidosis on their own.

Confirmation usually requires a biopsy , meaning a small tissue sample. The sample may come from abdominal fat, the kidney, the digestive tract, or another affected area. The choice depends on your symptoms, test results, and the safety and likely usefulness of the procedure.

The tissue is stained with Congo red , a dye that helps specialists recognize amyloid under a microscope. Further laboratory testing is then needed to determine which protein formed the deposits. This process is called amyloid typing.

Typing is important because AA, AL, and inherited amyloidoses require different treatment. A biopsy that simply reports "amyloid" is not enough to choose therapy.

Additional tests may include an electrocardiogram, heart ultrasound, kidney imaging, or scans

that estimate the amount and location of amyloid. Specialized amyloid scans are available only at some centres. Genetic testing may be considered when an inherited inflammatory condition or hereditary amyloidosis is possible.

Treatment and management

Treatment focuses on reducing the inflammation that produces SAA. The best approach is based on the underlying cause rather than on the deposits alone.

For an immune-mediated inflammatory condition, treatment may involve medicines that calm specific parts of the immune system. These can include conventional anti-inflammatory treatments or targeted biologic medicines. Familial Mediterranean fever has its own established treatment approach, commonly involving colchicine and, in selected cases, targeted anti-inflammatory therapy.

If a chronic infection is responsible, treatment is directed at clearing or controlling that infection. This may involve antimicrobial treatment and, in some situations, a procedure to remove or drain the source.

Response is often followed with CRP or SAA blood tests. Keeping inflammation consistently controlled matters because repeated inflammatory flares can continue to produce amyloid.

Treatment also supports affected organs. For kidney involvement, this may include managing blood pressure, reducing protein loss when appropriate, treating swelling, and monitoring fluid and salt balance. Medicines and dietary changes must be tailored to kidney function and other health conditions.

People with advanced kidney failure may need dialysis. Kidney transplantation may be possible for selected people, especially when the underlying inflammation is well controlled. Amyloid can eventually affect a transplanted kidney if SAA remains persistently high.

Care may involve kidney, rheumatology, infectious disease, digestive, genetics, or amyloidosis specialists. The team needed depends on the cause and the organs involved.

Complications

Progressive kidney damage is the main long-term concern. Heavy protein loss can cause marked swelling and may increase the chance of infection or blood clots. Kidney failure can develop if damage becomes advanced.

Digestive involvement may lead to poor nutrition, dehydration, bleeding, or difficulty absorbing

food. An enlarged liver or spleen may affect blood tests even when it causes few obvious symptoms.

Hormone-producing glands are affected less often. If the adrenal glands are damaged, the body may have trouble maintaining blood pressure and responding to physical stress.

Complications are not inevitable. The likelihood of further damage is generally lower when the underlying inflammation and SAA production remain well controlled.

Prevention

AA amyloidosis cannot always be prevented. Some inflammatory and autoinflammatory conditions are inherited or arise for reasons that cannot be changed.

Prompt, sustained control of chronic inflammation can lower the chance of amyloid forming. If AA amyloidosis is already present, controlling inflammation may reduce new deposits and protect organ function.

Taking treatment for an underlying condition as agreed and attending monitoring appointments can help identify continuing inflammation. Symptoms alone may not show whether SAA or CRP remains high.

There is no specific food, supplement, or lifestyle programme proven to prevent AA deposits. A balanced diet can support general health, but kidney disease, swelling, or poor nutrition may require individual dietary advice.

Living with it and what to expect

AA amyloidosis usually requires long-term monitoring. Follow-up commonly includes blood pressure checks and blood and urine tests for inflammation, kidney function, and protein loss. Other tests are guided by the organs involved.

Improvement is often gradual. Inflammation markers may fall before swelling, urine protein, or organ function improves. Existing amyloid deposits can sometimes decrease when SAA stays low, but this may take months or years.

Some people remain stable for long periods with treatment of the underlying condition. Others continue to have kidney or digestive problems despite good inflammation control, especially when substantial damage was present at diagnosis. Further inflammatory flares can restart amyloid production.

Day-to-day life may include managing fatigue, swelling, medication schedules, and

appointments. Activity can usually be adjusted to your energy level. If swelling, kidney impairment, or digestive symptoms affect eating and drinking, ask for advice suited to your test results rather than making major restrictions yourself.

Routine follow-up remains important even when you feel well. Protein leakage and loss of kidney function may progress without clear early symptoms.

When to get medical help

Arrange a routine medical review if you develop persistent foamy urine, ankle swelling, ongoing diarrhea, unexplained weight loss, increasing fatigue, or reduced appetite. These symptoms are not specific to amyloidosis, but they may need blood and urine testing.

If you have already been diagnosed, contact your care team promptly about increasing swelling, a clear drop in urine output, repeated vomiting or diarrhea, signs of infection, or a flare of your underlying inflammatory condition. These may require earlier assessment rather than waiting for a routine appointment.

Seek urgent or emergency care for:

These symptoms can have several causes. They need urgent assessment whether or not they are related to amyloidosis.

- Severe or sudden breathlessness
- Chest pain, fainting, or new confusion
- Very little or no urine
- Vomiting blood or passing black, tar-like stool
- Sudden painful swelling in one leg
- Severe weakness with dizziness or very low blood pressure

Common questions

Is secondary systemic amyloidosis cancer?

No. AA amyloidosis is caused by chronic inflammation, not cancer cells. Another type, AL amyloidosis, involves abnormal cells in the bone marrow and is treated differently.

Can amyloid deposits go away?

They can decrease in some people when the underlying inflammation is kept under control and SAA remains low. This does not always happen, and organ damage that has already developed

may persist.

Is AA amyloidosis hereditary?

AA amyloidosis itself is usually not directly inherited. However, inherited autoinflammatory conditions such as familial Mediterranean fever can cause the inflammation that leads to it.

Does it always cause kidney failure?

No. The kidneys are commonly affected, but kidney failure is not inevitable. The outlook is influenced by the amount of existing damage and how completely the underlying inflammation can be controlled.

Does AA amyloidosis affect the heart?

It can, but significant heart deposits are less common than in AL or transthyretin amyloidosis. Heart symptoms still need assessment because they may have another cause.

Do I need a special diet?

There is no diet that removes amyloid. If you have kidney impairment, swelling, diarrhea, or weight loss, a clinician or dietitian may recommend changes based on your kidney function, nutrition, and treatment.

Sources

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