CONDITION

Folate-deficiency anemia

Folate-deficiency anemia occurs when too little folate prevents the body from making enough healthy red blood cells.

WHAT IT IS
Anemia caused by too little folate

BODY SYSTEM
Blood and circulation

MAIN SYMPTOMS
Tiredness, weakness, breathlessness, pale skin

WHAT CAUSES IT
Low intake, poor absorption, increased need, certain medicines

HOW IT IS DIAGNOSED
Blood count and folate and vitamin B12 tests

MAIN TREATMENT
Folic acid replacement and treatment of the cause

CAN IT BE CURED?
Yes, replacement usually corrects the anemia

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

LONG-TERM OUTLOOK
Usually excellent; recurrence possible if the cause remains

Overview

Folate-deficiency anemia occurs when your body does not have enough folate to make healthy red blood cells. Folate is vitamin B9. Folic acid is the manufactured form used in supplements and fortified foods.

Red blood cells carry oxygen around the body. Without enough folate, developing blood cells cannot make DNA normally. They become unusually large and may not mature properly, causing megaloblastic anemia . This can reduce oxygen delivery and cause tiredness, weakness, and breathlessness.

The condition is usually treatable, but it is important to identify its cause. Possible reasons include low dietary intake, poor absorption, increased needs during pregnancy, and certain medicines. Vitamin B12 deficiency can cause similar blood changes and must also be

considered.

Symptoms

Symptoms often develop gradually. Mild anemia may cause no obvious symptoms and may be found during a blood test for another reason.

Possible symptoms include:

Many conditions can cause these symptoms, so blood tests are needed.

Numbness, tingling, balance problems, or loss of sensation are more typical of vitamin B12 deficiency. Tell a healthcare professional if you have these symptoms because untreated B12 deficiency can damage nerves.

- Ongoing tiredness or reduced energy
- Weakness or reduced exercise tolerance
- Shortness of breath, especially during activity
- Pale skin
- Headaches, dizziness, or light-headedness
- A fast or noticeable heartbeat
- Reduced appetite
- A sore, smooth, or red tongue
- Mouth ulcers
- Difficulty concentrating or irritability

Causes and risk factors

Folate occurs naturally in leafy green vegetables, beans, peas, citrus fruit, liver, and some nuts. Many breads, cereals, and grain products contain added folic acid.

Deficiency can develop when you do not consume enough folate, cannot absorb it properly, or need more than usual.

Low dietary intake may occur with a very restricted diet, poor appetite, food insecurity, or long-term heavy alcohol use. Alcohol can also interfere with folate absorption and use.

Poor absorption can result from damage or changes to the small intestine. Causes include coeliac disease, inflammatory bowel disease, some digestive surgery, and persistent diarrhea.

Increased need may occur during pregnancy, breastfeeding, rapid growth, or increased red blood cell production. Long-term destruction of red blood cells, called hemolysis, is one example.

Some medicines interfere with folate or its metabolism, including certain anti-seizure medicines, methotrexate, trimethoprim, and sulfasalazine. Do not stop prescribed medicine or start folic acid without medical advice, because folic acid may affect how some treatments work.

Folate deficiency may occur alongside vitamin B12 deficiency, iron deficiency, or another cause of anemia.

Diagnosis

Diagnosis usually begins with a complete blood count , or CBC. This measures hemoglobin and provides information about the number and size of red blood cells.

In folate-deficiency anemia, hemoglobin is low and red blood cells are often larger than usual. Their average size is reported as the mean corpuscular volume, or MCV. A blood film may show large, immature-looking red cells and changes in some white blood cells.

Blood tests check folate and usually vitamin B12 because both deficiencies can produce similar findings. Iron studies may also be needed, as iron deficiency can make the pattern less clear.

Results must be interpreted together. Recent meals or supplements can affect blood folate, and large red blood cells have other possible causes, including alcohol use, liver conditions, an underactive thyroid, bone marrow conditions, and some medicines.

Further testing depends on the suspected cause. It may include tests for coeliac disease, liver or thyroid problems, red blood cell breakdown, or other nutritional deficiencies. Your healthcare team may ask about your diet, alcohol use, digestive symptoms, pregnancy, surgery, and medicines.

Treatment and management

Treatment usually involves folic acid tablets and addressing the cause. Some people need a limited course, while those with an ongoing cause may need longer-term replacement.

Vitamin B12 should be checked before or around the time folic acid treatment begins. Folic acid can improve anemia caused by B12 deficiency without treating its effects on the nerves.

This may make B12 deficiency harder to recognize while nerve injury continues.

If diet contributed, increase folate-rich foods such as:

Food alone may not correct established anemia quickly and may be insufficient if absorption is poor or folate needs remain high.

Underlying conditions should be treated where possible. For example, treating coeliac disease may improve absorption. If a medicine may be contributing, the prescriber can decide whether folate replacement or a treatment change is appropriate. Do not adjust the medicine yourself.

Follow-up blood tests may confirm that new red blood cells are being produced and hemoglobin is recovering. A poor response may lead to checks for missed doses, ongoing blood loss, another deficiency, poor absorption, or a different cause.

- Spinach, kale, broccoli, and other green vegetables
- Beans, lentils, chickpeas, and peas
- Oranges and other citrus fruit
- Fortified breads and breakfast cereals
- Nuts and seeds

Complications

Untreated anemia can limit daily activity and place extra strain on the heart. Severe anemia may cause marked breathlessness, a rapid heartbeat, chest discomfort, or fainting, especially in someone with heart or lung disease.

Low folate around conception and during early pregnancy increases the risk of neural tube defects, serious problems affecting the baby's developing brain and spinal cord. It may also contribute to maternal anemia and other pregnancy complications.

Another concern is missing vitamin B12 deficiency. Folic acid may correct the blood count while B12-related nerve damage continues. Prompt assessment is important if anemia occurs with tingling, numbness, walking difficulty, memory changes, or vision symptoms.

Prevention

Not every case can be prevented. Poor absorption, increased red blood cell breakdown, or a necessary medicine may cause deficiency despite a balanced diet. Monitoring and planned replacement may reduce recurrence.

Eating a range of folate-containing foods can help prevent deficiency caused by low intake. Steaming or lightly cooking vegetables may preserve more folate than prolonged boiling.

People who could become pregnant are advised to take folic acid before conception and during early pregnancy because the baby's brain and spinal cord develop very early. Follow local pregnancy guidance about the appropriate amount. Some people need a different dose because of their medical history or medicines.

Do not take large amounts of folic acid simply to treat unexplained tiredness. Testing is important because folate and vitamin B12 deficiencies must be distinguished.

Living with it and what to expect

Most people recover well once folate is replaced and the cause is addressed. The bone marrow can begin making healthier red blood cells soon after treatment starts, although symptoms and blood counts may take several weeks or longer to improve.

Recovery may be slower if anemia was severe, another deficiency is present, or an underlying condition continues to affect absorption. Tiredness can also have several causes, so persistent symptoms do not always mean treatment has failed.

Folate-deficiency anemia does not usually cause permanent problems when treated. Unlike vitamin B12 deficiency, it is not a typical cause of lasting nerve damage.

The anemia can return if its cause remains. People with chronic malabsorption, ongoing high folate needs, heavy alcohol use, or continued use of a folate-interfering medicine may need long-term supplementation and blood tests under medical supervision.

Continue normal activities as your energy allows. If you feel dizzy, breathless, or unusually weak, reduce strenuous activity until the anemia has been assessed and is improving.

When to get medical help

Arrange a routine medical appointment if you have ongoing tiredness, weakness, pale skin, breathlessness during activity, a sore tongue, or repeated mouth ulcers. Seek assessment if a previous folate deficiency may have returned.

Contact a healthcare professional promptly if:

Seek emergency help for chest pain, severe difficulty breathing, fainting, new confusion, or a very rapid heartbeat with marked weakness. These symptoms may have another cause but require urgent assessment.

- You are pregnant or planning pregnancy and may have folate deficiency
- Symptoms are worsening despite treatment
- You have persistent diarrhea, unexplained weight loss, or other signs of poor absorption
- You develop numbness, tingling, balance problems, confusion, or vision changes

Common questions

Is folate-deficiency anemia the same as vitamin B12 deficiency?

No. Both can cause large, abnormal red blood cells and similar symptoms, but they involve different vitamins. B12 deficiency is more likely to cause numbness, tingling, balance problems, and other nerve symptoms. Blood tests are needed to distinguish them, and both can occur together.

Can I cure folate-deficiency anemia with food alone?

Diet can help prevent recurrence when low intake is the cause, but established anemia is usually treated with folic acid. Food may not provide enough folate quickly, especially if you have poor absorption or increased needs.

How long does recovery take?

Blood cell production usually responds soon after effective treatment, but energy and breathlessness may take several weeks to improve. Recovery can take longer if anemia is severe or another condition is present. Follow-up blood tests show whether treatment is working.

Is folate-deficiency anemia serious?

It is usually treatable and does not normally become an emergency. However, severe anemia can strain the heart and reduce oxygen delivery. Folate deficiency during early pregnancy also increases the risk of neural tube defects.

Can folic acid hide vitamin B12 deficiency?

Yes. Folic acid can correct the anemia associated with B12 deficiency while B12-related nerve problems continue. Vitamin B12 is therefore usually checked before or when folic acid treatment starts.

Will the anemia come back?

It can return if the underlying cause remains, such as poor absorption, heavy alcohol use, increased folate needs, or a medicine that affects folate. Some people need ongoing replacement and periodic blood tests.

Sources

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