Alpha 1 Antitrypsin Deficiency
Living with Liver Disease

alpha 1 uk support

A guide to the assessment and management of A1AD related liver disease

Registered Charity England & Wales 1146330
Scotland SC043177

Alpha 1 antitrypsin deficiency and liver disease.

Alpha 1 antitrypsin deficiency, also called Alpha-1, A1AD or AATD, is a serious hereditary disorder which can result in lung or liver problems that can significantly impact on your life and even be life threatening.

Everyone's liver produces the protein alpha 1 antitrypsin (AAT). The job of AAT is to protect the body from inflammation, especially in the lungs. In people with Alpha-1 their AAT is malformed and cannot be released by their liver. Most commonly this leads to lung disease but the build up of AAT in the liver can also lead to liver disease.

Rarely, the deficiency can cause problems with the pancreas and is occasionally associated with the skin disease panniculitis. However problems with the lungs, and to a lesser degree the liver, are far more common.

This booklet has been written to help you understand some of the tests, procedures and treatments that someone with Alpha-1 related liver disease may be faced with.

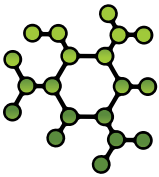
However, it is important to remember that most Alpha-1 patients cope very well with chronic liver problems and that the condition can be managed very successfully for many years.

How does alpha 1 antitrypsin deficiency affect the liver?

Because the AAT that Alpha-1 patients produce is abnormal, it gets stuck in the liver and cannot be released into the bloodstream. Alpha-1 lung disease is directly related to the lack of protection that the AAT gives to the lung's delicate tissue. Alpha-1 liver disease on the other hand, is caused by a build up of AAT that the liver is unable to break down. This build up causes inflammation which is called hepatitis. Over a long period the hepatitis can lead to scarring of the liver, which is called cirrhosis.

Although lung disease is far more common in patients with Alpha-1 than liver disease, those whose liver is unable to break down the faulty AAT are likely to develop hepatitis. Liver disease can affect Alpha-1 patients of all ages, newborn, children and adults.

How did I get alpha 1 antitrypsin deficiency?



As I'm sure you know, we are all made up of many pairs of genes and for each pair, we inherit one from each parent.

Pi stands for protease inhibitor of which alpha 1 antitrypsin is just one. A "normal" person is what is called PiMM i.e. they have two normal genes, this means that they produce a full supply of AAT.

Sometimes a faulty gene is thrown into the mix; the most common abnormal gene is called the Z gene (there are other variants but since they all follow the same pattern we'll stick with the Z). For someone to be PiZZ they must have inherited a faulty gene from each parent, which means in turn, that their parents must have had at least one Z gene (usually MZ).

How will this affect my own family?

If you have been diagnosed with one of the most severe genetic combinations, it does mean that your children will have inherited at least one faulty gene, because that is all you have to pass on.

Unless your partner also has a faulty gene, your children will be carriers i.e. they will have one normal gene and one faulty gene.

It is important that family members of those diagnosed with Alpha-1 are tested. The earlier a diagnosis is made the more effective lifestyle and treatment options will be.

If you feel that some family members should be tested but haven't been, you can obtain test kits from the Antitrypsin Deficiency Assessment and Programme for Treatment (ADAPT), which is based in Birmingham. Contact details can be found on the back cover.

Who should be tested for alpha 1 antitrypsin deficiency?

- The World Health Organisation (WHO), the American Thoracic Society, Alpha-1 Canada, the ADAPT Research Project and the Dept. of Health here in the UK, recommend that everyone with COPD be tested for alpha 1 antitrypsin deficiency.
- Everyone with emphysema, chronic obstructive pulmonary disease (COPD), chronic bronchitis or asthma that is not fully responsive to treatment.
- Individuals with bronchiectasis.
- Newborns, children and adults with unexplained liver disease.
- Individuals with a family history of liver or lung disease.
- Blood relatives of persons diagnosed with alpha 1 antitrypsin deficiency.
- Anyone with panniculitis, a skin disease.

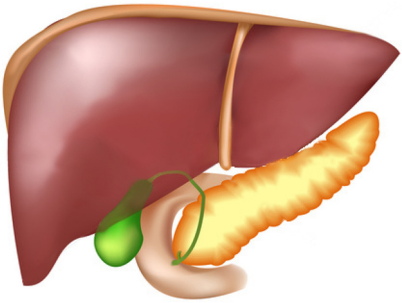
Ask your doctor or contact ADAPT about being tested

What functions does a normal liver have?

The liver manufactures many proteins and other substances that sustain life and keep the body working smoothly.

The liver also helps us to digest nutrients from the food we eat. To help the intestines break down fats it produces bile which is stored the gall bladder. The bile drains into the intestines to mix with the food.

The bile and the blood flowing through the intestines absorb the nutrients before passing through the liver. Here the nutrients are processed and stored, or distributed, to other parts of the body. Most of the bile is then recycled to use again. Toxic substances or waste products are returned to the intestines to be eliminated.



Waste products from other parts of the body are also sent to the liver in the blood stream and are eliminated in the same way. This is also how the body clears certain drugs and medications from the blood circulation. These are broken down and inactivated, then eliminated either by the bile or the urine.

What will my doctors want to know?

Anyone diagnosed with Alpha-1 associated liver problems will be worried about how it will affect them. This is particularly worrying when the patient is a child.

The first thing that will happen is that you will be given a thorough check by your doctors to find out exactly what the problems are. The fact that the liver and nutrition are closely linked will probably be a good place to start.

There will be simple measurements of height, weight, and body mass index (BMI). These are especially important when assessing a growing child.

They may ask how quickly wounds heal or about the quality of the skin and hair, these are all indicators of liver function.

There will probably also be questions about any family history of liver disease and perhaps questions about alcohol comsumption for adults. In the absence of clinical liver disease alcohol consumption, within government guidelines, appears to be safe. However it should be noted that even casual consumption of alcohol can increase the risk of liver problems for those with Alpha-1.

They may ask if there is a history of jaundice (yellowing of the skin and eyes) at any stage during your life, or if you have a history of things like gall stones, kidney stones or significant injuries. Also, whether there are any other significant events in your past e.g. if you have ever been exposed to hepatitis A, B, or C, or tuberculosis, or HIV.

Other risk factors might include cancer and immune diseases.

They will also discuss with you all your current medications, and any herbal and dietary supplements you may take since many of these can have an effect on liver health.

They may ask if you have experienced specific symptoms such as:

• Diarrhoea, which is often reported in both adults and children with liver problems.
• Itching is a common complaint for those with liver disease. It is caused by a build up of waste products that are not being filtered out by the liver.
• Abdominal pain, indigestion or vomiting are rather non specific but commonly reported by liver patients.
• Vomiting blood or passing blood in bowel movements. This is caused by portal hypertension and happens because the blood flow through the liver from the intestines can be disrupted by scarring.

• Any other unusual bleeding. This could be an indicator of liver problems, and could be related to poor absorbtion of vitamin K.
• Any unusual sleepiness or change in alertness. These could point to silent deterioration of the liver.

What tests or examinations can be expected?

During a physical examination your doctor will check for obvious signs relating to liver disease. They will look for skin rashes, or signs that you have been scratching itchy skin. They will also check for yellowing of the skin and eyes which indicates jaundice.

It should be mentioned here that some new born infants have a type of jaundice that is not related to A1AD liver disease. It can just as easily be caused by the baby having an immature liver which isn't yet able to filter the blood properly. There are blood tests which can determine which type of jaundice the baby has.

Sometimes there will be unusual clusters of prominent veins in liver disease, so they will look for these.

They will probably also check to see if there is any swelling of the hands and feet, or changes in the shape of fingers and toes. These changes are called clubbing and are sometimes found in patients with liver or lung disease.

There will be checks on the heart and lungs as they can be affected by liver disease and of course lung function is also a significant problem for many alphas, so that may also be tested.

The doctor will examine the abdomen to see if they can feel an enlarged or hardened liver through the skin, the liver may also feel painful to the touch.

The spleen may also be enlarged and there could be an excess of fluid in the abdomen, this is called ascites. They may even do a rectal examination which could reveal enlarged and painful hemorroids.

A CT or ultrasound scan will no doubt be performed, or a liver biopsy suggested, these are all useful diagnostic tools.

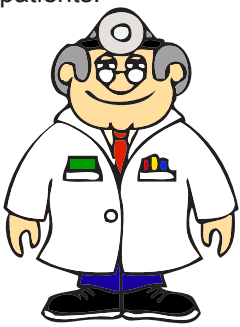
There will also be the blood tests to check all the liver functions. The results will reveal any abnormal levels of various substances found in the blood which could indicate problems with the liver. Blood levels of the fat soluble vitamins A, D, and E can help in nutritional assessment, especially in children.

It is reassuring to know that these levels are often high in newborn Alpha-1 children but for most infants, these levels will return to normal during the first two years of life.

What will happen now?

Once a diagnosis has been made then management of the condition can begin. Newborns will probably be treated in hospital but many adults and children with milder problems are followed as outpatients.

There will be an evaluation of what can be done to treat existing problems and also to help prevent future complications.



The patient will be monitored with regular outpatient appointments. Because of the risk of lung disease lung function will also be monitored.

Diet and lifesyle choices will be discussed. If an adult is a smoker it is imperative that they quit. In the case of children they must not be exposed to second hand smoke.

Monitoring of growth and development in children is especially important. They may be given special food or supplements. Babies may have special milks and sometimes powder supplements may be added to their milk to make it more nutritious.

Low blood levels of the fat soluble vitamins may mean that fat is not being digested properly, in which case supplements can help prevent serious complications. These will help with bleeding and neurological problems and also help prevent damage to nerves.

Severe itching of the skin caused by a build up of bile waste products can be treated with antihistamines which block the irritation and so make patients more comfortable.

In cases of severe liver damage, the build up of ammonia and other waste products can cause sleepiness and confusion. Ammonia is produced when the liver breaks down proteins, so it may be necessary to restrict the amount of protein in the diet. Oral laxatives may be used to flush the intestines of these waste products. This will help improve mental alertness.

Sometimes the liver doesn't make enough proteins for the blood such as albumin and blood clotting substances. If albumin levels are low it can create an imbalance of salt and water throughout the body which can cause swelling and excess fluid accumulating in the abdomen (ascites). For adults, it may be necessary to limit salt intake to help relieve this problem. There are also medications called diuretics which help to remove excess fluid by increasing the kidney's urine output. If the fluid still continues to build then it may be necessary to drain the fluid with a needle in a simple procedure called paracentesis.

If blood clotting is a problem then vitamin K injections will be given.

If portal hypertension is present due to cirrhosis, then patients should avoid taking aspirin or other non-steroidal anti inflammatory drugs such as ibuprofen.

Most patients with mild to moderate liver disease should be able to take occasional, normal doses of paracetamol if their doctors say it is safe to do so. Remember though that large doses of paracetamol can cause liver damage.

If the patient is vomiting or passing large amounts of blood then a blood transfusion may be necessary.

There are surgical procedeures which may be used although these are not without risks.

Infections of any sort must be treated promptly because chronic liver disease can result in a less effective immune system. Non-liver related infections such as the ‘flu can be more severe and need more aggressive treatment.

Anyone with significant liver diease should call their doctor if they develop a fever. Patients can develop serious bacterial infections of the bile ducts in the liver itself, and also bacterial infections of fluid in the abdomen. Often antibiotics will be given intravenously.

What about augmentation therapy?

Since liver damage is not related to a lack of AAT, augmentation therapy, which is available in some countries for lung affected Alpha-1 patients, is not used for liver patients.

A word about liver cancer

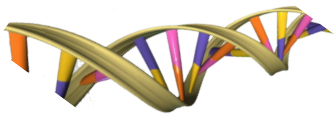
We should also include a brief word about cancer of the liver. There does seem to be a significant increased risk of developing this type of cancer in patients with Alpha-1. This cancer is rare even for Alpha-1 patients, it just isn’t as rare as in the general population. It can be detected with ultrasound scans and if caught early enough the tumour should be operable and cured.

What if my liver disease still gets worse?

It is very important to remember that most people with Alpha-1 will never develop significant liver disease. If it does occur it is usually very mild and chronic and remains stable for many decades. Very few will suddenly develop serious liver disease but it does happen. This can sometimes become life threatening quite quickly and in those few cases transplantation may be the only course to consider in order to save life.

Of all the Alpha-1 children born, only around 2% will develop severe liver failure that needs a transplant within the first two years of life. Most infants born with severe AAT deficiency i.e. they have two Z genes, will have abnormal liver function tests during this period of their lives but for the majority, who do not go on to develop serious liver disease, these test results will usually return to normal during childhood.

Liver transplantation has become very successful and is a long term solution to a failing liver. It is also a cure for Alpha-1 since the new liver will produce normal AAT and the risk to future lung disease is reduced. However, you will always be an Alpha-1 patient and can still pass the abnormal gene on to your children.



Your future with alpha 1 antitrypsin deficiency

A positive diagnosis of alpha1 antitrypsin deficiency represents an opportunity to take concrete steps to avoid risk factors, limit symptoms, or slow the progression of symptoms you may already be experiencing.

Proper care by you and your doctors can have significant positive effects for the rest of your life.

Proper treatment by your doctors and lifestyle changes you can make, will significantly increase the quality and quantity of your life.

Your doctor or consultant is the best person to provide information about the medications and treatment available for you now, and to look after you in medical terms, but there are important steps you can take to help take care of yourself.

Be involved in your healthcare

It is important that you develop a good relationship with your doctors and consultants. Things are improving, but unfortunately, many are still not very knowledgeable about Alpha-1, so they may not always have the answers you are looking for.

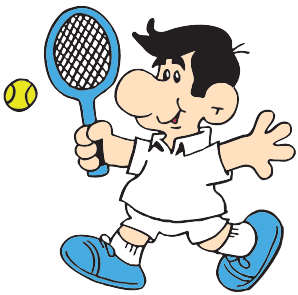
One of the first things you need to know is exactly which genes you have, without that knowledge it is difficult to know how the diagnosis will affect either you or your family.

If you are symptom free, you have a good chance of remaining so by making small but important changes in the way you live.

Remember, Alpha-1 can also affect the lungs and cigarette smoke is the greatest risk factor for developing life threatening lung problems. If you are a smoker, the single most important thing you can do to help yourself is to give up immediately. Passive smoking should also be avoided wherever possible.

Avoid other lung irritants, especially environmental pollutants used in agriculture, mineral dust, gas and fumes.

Regular exercise and good nutrition are beneficial in maintaining health, as is maintenance of the fat-soluble vitamins (A, D, E and K).



Eating a well balanced diet should provide enough of these fat soluble vitamins for most people although as we have seen, extra supplements may sometimes be necessary. However, since these vitamins are actually stored in the liver, supplements should only be taken if advised by your doctor.

Avoid things that may cause extra harm to the liver such as an excess of alcohol, street drugs, some over the counter drugs and certain prescribed medications. If in doubt check with your doctor.

Eating a well balanced, healthy diet that contains plenty of fruits and vegetables, is essential to provide your liver with the antioxidants that it needs to protect against inflammation.

Researchers around the world are studying Alpha-1 and learning more all the time. Visit the Alpha-1 UK Support Group website regularly for the latest news and advice on managing your Alpha-1.

You can find us at: www.alpha1.org.uk

Join The Alpha-1 UK Support Group

Joining the support group is easy. Just visit our website: www.alpha1.org.uk and follow the “Mailing List” directions to the left of the screen. There is also a link to our Facebook group, if you would prefer to join us there.

- By joining us you will be in contact with a large community of Alpha-1 patients, their families and carers.
- We will keep you informed of all the latest news and information about Alpha-1, including new clinical trials.
- We will offer lifestyle tips to help you to keep as fit and active as possible.

If you don’t have access to the Internet then you can contact us directly at the address on the back page. We can then arrange to send you an information pack and our six monthly newsletter.

Perhaps you could help raise funds to enable us to continue our work?

Whether £5 or £500, all donations will be put to good use, providing information, equipment and support for all Alpha-1 patients. In addition, we aim to promote better awareness and understanding of these A1AD related diseases thoughout the medical profession.

For details of how to donate, or how to find us on JustGiving please visit our website.

It is also possible to raise funds without any cost to yourself, by using the Easyfundraising website to do your online shopping, or the Easysearch website for your internet searches. Again, please visit our website and follow the directions on the homepage to sign up to either of these free services.

The members of our support group face many issues that impact on the quality of their lives and the lives of other family members. Alpha-1 UK Support Group is committed to addressing these issues and to bringing about a well informed and responsive community. We have been supporting Alpha-1 patients for over 15 years and we are backed by the UK's leading experts and researchers in the field of alpha 1 antitrypsin deficiency.

For more information about the Alpha-1 UK Support Group, ADAPT, or to help us with our work then please visit our website: www.alpha1.org.uk

Thank you.

Join our Alpha-1 community today at:

www.alpha1.org.uk

also find us on Facebook Groups:

alpha-1 uk Support Group - Alpha-1 Antitrypsin Deficiency (Est 1997)

With Special Thanks to :

ALPHA-1 CANADA
www.alpha1canada.ca

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