CONDITION

Hydrocarbon pneumonia

Hydrocarbon pneumonia is lung inflammation caused by breathing or aspirating petroleum-based liquids into the airways.

WHAT IT IS
Lung inflammation after hydrocarbons enter the airways

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Cough, breathlessness, chest pain, fever

WHAT CAUSES IT
Hydrocarbon liquid entering the lungs

HOW IT IS DIAGNOSED
Exposure history, oxygen testing, and chest imaging

MAIN TREATMENT
Supportive breathing care and exposure removal

CAN IT BE CURED?
Sometimes - many acute cases fully recover

IS IT AN EMERGENCY?
Sometimes - breathing difficulty or blue lips

LONG-TERM OUTLOOK
Often good; chronic lung injury may persist

Overview

Hydrocarbon pneumonia is inflammation of the lungs after a hydrocarbon enters the airways. Hydrocarbons are chemicals found in products such as gasoline, kerosene, lamp oil, lighter fluid, mineral spirits, paint thinner, furniture polish, and some lubricating or mineral oils.

The condition is also called hydrocarbon pneumonitis or chemical pneumonitis. "Pneumonitis" means lung inflammation caused by irritation rather than infection.

Exposure may be sudden, such as when liquid is accidentally swallowed and then coughed or vomited into the lungs. This is called aspiration. It can also happen after breathing a hydrocarbon mist or aerosol. Repeated aspiration of oily products may cause a slower form of inflammation called exogenous lipoid pneumonia.

Hydrocarbon pneumonia matters because inflamed lungs may have difficulty moving oxygen into the blood. Some cases are mild and improve with monitoring and supportive care. Others cause serious breathing problems that require hospital treatment.

Symptoms

Symptoms often begin within minutes or hours of an acute exposure. Chest imaging changes may appear later, so an early normal X-ray does not always exclude lung injury.

Possible symptoms include:

Fever can result from chemical inflammation and does not always mean there is a bacterial infection.

Chronic lipoid pneumonia may develop more gradually. It can cause a long-lasting cough, breathlessness during activity, chest discomfort, weight loss, or repeated episodes that seem like ordinary pneumonia. Some people have few symptoms, and the problem is first noticed on a chest scan.

- Coughing, choking, or gagging during or after exposure
- Shortness of breath or rapid breathing
- Chest discomfort or pain
- Wheezing
- Fever
- Tiredness, dizziness, or headache
- Nausea or vomiting

Causes and risk factors

Hydrocarbon pneumonia occurs when a hydrocarbon reaches the small airways and air sacs of the lungs. These air sacs normally transfer oxygen into the blood.

Some thin, easily flowing liquids spread rapidly across lung tissue. Products that evaporate easily can also irritate the airways when their fumes are inhaled. The risk is affected by the product, the amount entering the lungs, and whether coughing or vomiting occurred.

Situations linked with hydrocarbon aspiration include:

Young children are at particular risk of accidental swallowing. People with swallowing problems, reflux, reduced alertness, or neurological conditions may be more likely to aspirate

oily products.

Hydrocarbon pneumonia is not inherited. It is not caused by an immune disorder, and it does not spread from person to person.

- Accidentally swallowing household or fuel products
- Siphoning gasoline by mouth
- Vomiting after swallowing a hydrocarbon
- Spraying or using these products in poorly ventilated areas
- Occupational exposure to mists, fuels, solvents, or oils
- Fire-eating or similar activities involving fuel
- Regular use of oil-based nasal products
- Taking mineral oil when swallowing is difficult

Diagnosis

Diagnosis is based on the exposure history, symptoms, oxygen level, examination, and chest imaging. It is important to tell the healthcare team the exact product involved, if known. The container or its label can help identify its ingredients, but you should not risk another exposure to retrieve it.

A pulse oximeter measures the oxygen level in your blood through a sensor placed on a finger. A blood gas test may be needed if breathing is significantly affected.

A chest X-ray can show areas of inflammation, often in the lower parts of the lungs. Changes may take several hours to become visible. A computed tomography, or CT, scan gives more detailed pictures and may be used when the diagnosis is uncertain or symptoms are persistent.

Blood tests may show inflammation, but they cannot confirm hydrocarbon pneumonia by themselves. Similar findings can occur with infection.

For suspected chronic lipoid pneumonia, a respiratory specialist may recommend bronchoscopy. This involves passing a thin camera into the airways. Fluid samples or a small tissue sample may help show oil-containing immune cells and exclude infection, cancer, or another lung condition.

Treatment and management

The first step is to stop the exposure. Treatment then focuses on supporting breathing while the lungs recover.

A person with mild symptoms may need observation and repeated oxygen checks. More significant illness may require hospital care, oxygen, intravenous fluids, or breathing support. In severe cases, a ventilator may temporarily assist breathing.

After a hydrocarbon has been swallowed, vomiting should not be induced. Vomiting increases the chance that liquid will enter the lungs. Activated charcoal does not absorb most hydrocarbons well and can also create an aspiration risk, so it is not routinely used for this purpose. A poison information service can give advice based on the exact product and circumstances.

Antibiotics like amoxicillin or doxycycline do not treat chemical inflammation. They may be used if there is evidence of a separate bacterial infection, but fever or an abnormal X-ray alone does not always prove infection.

Corticosteroids like prednisone or hydrocortisone reduce inflammation in some illnesses, but their routine benefit in acute hydrocarbon pneumonia has not been established. A specialist may consider them in selected severe or chronic cases after weighing the risks and excluding infection.

For chronic lipoid pneumonia, avoiding the oil or product responsible is essential. Some people need respiratory therapy, oxygen, or treatment of an underlying swallowing problem. Bronchoscopy or lung washing is occasionally considered in severe cases, but it is not standard treatment for everyone.

Complications

Most complications result from widespread inflammation or reduced oxygen transfer.

Possible complications include:

Severe complications are not inevitable. Risk is greater when a substantial amount reaches the lungs, symptoms worsen rapidly, or exposure continues over time.

- Low blood oxygen
- Respiratory failure
- Acute respiratory distress syndrome, a severe form of lung inflammation
- Air or fluid collecting around the lung
- Lung abscess or a secondary bacterial infection

- Persistent airway widening, called bronchiectasis
- Lung scarring, also called fibrosis

Prevention

Many cases can be prevented by keeping hydrocarbons out of the mouth and airways. Not every accidental exposure can be avoided, but safe storage and handling lower the risk.

Keep fuels, solvents, lamp oils, and similar products in their original labelled containers. Never put them into drink bottles, cups, or food containers. Store them securely away from children.

Do not siphon gasoline or other fuel by mouth. Follow workplace safety instructions, use ventilation, and wear the protective equipment specified for the product.

Avoid spraying solvent or oil products in enclosed spaces. Do not use mineral oil or oil-based nose products regularly if you have swallowing difficulties unless a qualified healthcare professional has recommended them with that risk in mind.

If someone swallows a hydrocarbon, do not make them vomit. Contact a poison information service for immediate product-specific advice.

Living with it and what to expect

After a limited, one-time exposure, symptoms may begin improving over several days. Cough and tiredness can last longer. Chest X-ray changes may take weeks or occasionally months to clear, even when breathing feels better.

Follow-up may include an examination, oxygen measurement, chest imaging, or breathing tests. These checks look for persistent inflammation, reduced lung function, or scarring. They are routine follow-up rather than a sign that complications are expected.

Chronic lipoid pneumonia can behave differently. Symptoms and scan changes may continue for months or years, especially if the source of aspiration is not recognised. Stopping exposure may allow gradual improvement, but established scarring may not fully reverse.

During recovery, smoke, fumes, and strenuous activity may worsen coughing or breathlessness. Return to work or exercise is guided by symptoms, oxygen levels, and the type of exposure. If the exposure happened at work, occupational health review may help prevent it from happening again.

Many people recover well after a mild acute episode. A severe exposure or long-standing aspiration can leave lasting breathing limitations, so the outlook is tied to the degree of lung

injury and whether further exposure stops.

When to get medical help

Contact a poison information service promptly after swallowing gasoline, kerosene, lamp oil, lighter fluid, paint thinner, or a similar product. Do this even if there are no immediate symptoms, because advice depends on the product and how the exposure happened.

Seek urgent same-day medical assessment after exposure if there is coughing, choking, vomiting, wheezing, fever, chest pain, or shortness of breath. Symptoms can develop over several hours.

Call emergency services if there is:

Do not induce vomiting or give food, drink, or home remedies unless a poison service or healthcare professional directs you to do so.

Arrange routine follow-up if a cough or reduced exercise tolerance does not settle, or if you have repeated pneumonia-like episodes while using mineral oil or another oily product.

- Severe or rapidly worsening difficulty breathing
- Blue or grey lips, tongue, or skin
- Confusion, extreme drowsiness, collapse, or a seizure
- Inability to speak normally because of breathlessness
- A serious exposure in an enclosed space

Common questions

Is hydrocarbon pneumonia contagious?

No. It is caused by chemical material entering the lungs, not by an infection that can pass between people. A secondary infection can occasionally develop, but the chemical lung injury itself is not contagious.

Is it the same as ordinary pneumonia?

No. Ordinary pneumonia is usually caused by bacteria, viruses, or other germs. Hydrocarbon pneumonia is chemical inflammation. The symptoms and X-ray findings can look similar, which is why the exposure history is important.

How soon do symptoms start?

Coughing or choking may begin immediately. Breathlessness, fever, or chest discomfort may develop over the next several hours. Imaging abnormalities can lag behind symptoms, so early assessment may include a period of observation.

Can a small amount cause lung injury?

Yes, if even a small amount enters the airway. The swallowed amount does not always show how much reached the lungs. Thin liquids that spread easily can cause inflammation after aspiration.

Will hydrocarbon pneumonia go away completely?

Many mild acute cases resolve with supportive care and no further exposure. Recovery may take days to weeks, while imaging changes can last longer. Severe injury, repeated aspiration, or chronic lipoid pneumonia may cause lasting scarring or breathing problems.

Do antibiotics or steroids help?

Antibiotics do not treat the chemical injury and are generally reserved for evidence of bacterial infection. Steroids are not routinely recommended for every case because their benefit is uncertain. Specialists sometimes use them in selected severe or chronic situations.

Sources

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