

Cat Lane's extended notes on alcohol ampoule injection

The text below was written by Digital Label-Writing Project volunteer Cat Lane in September 2021, following several sessions of research. The text was cut down for the label which appears on the object record, so the decision was taken to attach this longer version as a Digital Asset.

Ampoules are small, sealed glass capsules containing liquid, often in a measured quantity ready for injections. Injections of absolute alcohol, otherwise known as pure, 100%, or dehydrated alcohol, have been used in a variety of ways over the 20th century. In most cases the injections have been experimental, or as an alternative when more standard procedures are not possible. Their uses range from killing nerve cells for pain relief, killing tumours in cancer patients, and stopping bleeding in severe cases.

Examples:

Pain relief: In 1912, alcohol was injected into the trunk of a peripheral nerve, which caused local necrosis (death of body tissue) at the point of injection, whilst the nerve above the injection remained normal.

Cancer treatment: In 1917, repeated alcohol injections were chosen as a cancer treatment for a patient who refused surgery to remove the cancerous breast. The injected tissues contracted, the blood vessels sealed up and nerves compressed, resulting in nutrition supply for the tumour being cut off and the tumour atrophying.

Severe bleeding: In 1990, an alcohol injection was used to stop the bleeding from a ruptured hepatoma, which proved a useful treatment for the challenging condition.

The injections are relatively cheap and easy to administer, although they can be dangerous, as injecting too much alcohol can cause motor paralysis. As such, repeated smaller injections are recommended over one big injection. It is important to get the needle as close as possible to the site of treatment.

Nowadays, alcohol is more commonly used as an antiseptic to disinfect the skin before injection or surgery. Pure alcohol can be injected to treat specific illnesses, such as methanol or ethylene glycol toxicity, and to treat severe pain including trigeminal neuralgia (a severe pain in the jaw, lips, eyes and face). Injections have also been used to treat benign breast cysts and prevent their reoccurrence, and to control the blood supply to the heart to improve exercise ability in patients with symptomatic hypertrophic obstructive cardiomyopathy who are unable to receive open heart surgery.

Sources:

- 1912, [The Functional And Histological Effects Of Intraneural And Intraganglionic Injections Of Alcohol on JSTOR](#)
 - Intraneural (within a nerve), intraganglionic (between structure of multiple nerve cells)
 - Alcohol injected into the trunk of a peripheral nerve causes local necrosis (death of body tissue) at the point of injection
 - Change does not 'ascend', nerve above injection remains normal
- 1917, Breast cancer treated by alcohol injection [Cancer Of The Breast Treated By Injection Of Alcohol on JSTOR](#)

- Repeated alcohol injections were chosen as patient refused surgery to remove the cancerous breast. The injected tissues contracted, the blood vessels sealed up and nerves compressed, resulting in nutrition supply for the tumor being cut off and the tumor atrophying. Treatment was recommended if surgery refused/impractical.
- 1938, Pain relief [Intrathecal Alcohol Injection For Relief Of Pain: A Review on JSTOR](#)
 - Alcohol used at root of nerve to destroy it and relieve pain, 'partial destruction of the appropriate posterior nerve roots close to their entry into the spinal cord'.
 - He assumed pain is proportional in severity to the numerical strength of the sensory impulses reaching the centres concerned, he argued the decimation of the afferent nerve fibres should reduce the pain provoking stimulus below threshold value: by killing some of the nerve, he should lower the pain to a bearable level.
 - Using too much alcohol causes motor paralysis
 - 26/45 patients were relieved from alcohol treatment
 - Repeated smaller injections better than one big injection
 - Get the needle as close to site of injection as possible
- 1947, [Sympathectomy And Intraspinial Alcohol Injections For Relief Of Pelvic Pain on JSTOR](#)
 - Intraspinial injection of alcohol may injure the spinal cord, so should only be used on patients with cancer
 - Procedure is simpler than pelvic sympathectomy, doesn't require treatment in hospital, and higher percentage of patients with uterine carcinoma received relief from injection compared to sympathectomy
- 1987, [Endoscopic Injection Of Alcohol For Bleeding From Gastroduodenal Vascular Anomalies on JSTOR](#)
 - Injections cheaper and technically easier than currently favoured approach with neodymium YAG lasers
 - Japanese experience of endoscopic injection of alcohol is extensive and shows good control of bleeding and low complication rates, which study claims it supports
- 1990, Hepatomas, a cancer of the cells of the liver [Injection Of Alcohol To Control Bleeding From Ruptured Hepatomas on JSTOR](#)
 - Intralesional injection of alcohol is cheap, does not require any special skill, a useful treatment for challenging condition. Good at stopping bleeding in an emergency situation (though all patients died fairly soon after, did have cancer...)
- Commonly used now as antiseptic, to disinfect the skin before injection/surgery. Pure alcohol or ethanol can be injected into the skin to treat methanol or ethylene glycol toxicity
 - *British national formulary : BNF 69* (69 ed.). British Medical Association. 2015. pp. 42, 838. [ISBN 9780857111562](#)
 - [World Health Organization](#) (2009). *Stuart MC, Kouimtzi M, Hill SR (eds.). WHO Model Formulary 2008. World Health Organization. p. 321. hdl:10665/44053. ISBN 9789241547659.*
- Absolute alcohol injections are used to treat severe pain including trigeminal neuralgia (a severe pain in the jaw, lips, eyes and face), and methanol poisoning. Treatment of severe pain (including trigeminal neuralgia): The dose will depend on the location and severity of the pain. The Dehydrated Alcohol will be given as an injection close to the nerve. Methanol poisoning; The Dehydrated Alcohol is given as an infusion (drip) into a vein over 30 minutes. <https://www.medicines.org.uk/emc/files/pil.3609.pdf>
- Absolute alcohol injections have been used to treat benign breast cysts and prevent their reoccurrence. <https://gynecolsurg.springeropen.com/articles/10.1007/s10397-010-0559-2>

- Dehydrated alcohol injection is used to control the blood supply to the heart to improve exercise ability in patients with symptomatic hypertrophic obstructive cardiomyopathy who are not able to receive open heart surgery. <https://www.mayoclinic.org/drugs-supplements/dehydrated-alcohol-injection-route/description/drg-20523247>
- Absolute alcohol is 100% alcohol, or dehydrated alcohol
- Alcohol injections have been trialed in a variety of treatments, with the main aim to kill a disease or prevent pain

R.V.H. Aseptic Pharmaceutical Units

- Aseptic pharmaceutical units prepare and supply injectables to minimise risks
- Ampoules- a small, sealed glass capsule containing a liquid, especially a measured quantity ready for injecting