

Chronic Physical Effects of Alcoholism

There is no doubt as to the serious medical complications caused by alcoholism. Alcoholism is currently listed as the third leading cause of death in our society. Many alcohol related deaths go unreported, however, leading many professionals to believe that alcoholism is probably the number one killer. For example, cirrhosis of the liver (most commonly associated with alcoholism) is one of the top ten leading cause of death by itself. Often, if the cause of death is failure of a body organ or system, the role alcohol played is not considered. If a person dies of a heart attack, yet drank alcoholically for 35 years of his or her life, the death is attributed to the heart attack, not the drinking.

As an irritant, alcohol has the potential of causing serious physical harm to any and all of the body systems. Too often, though, medical and treatment professionals wait for the development of such physical symptoms to diagnose the problem of alcoholism. Unfortunately, while alcoholism is a chronic and progressive illness, the early symptoms are generally behavioral and not physical. The majority of medical problems typically appear in the late, chronic stage of the illness. Waiting for physical signs to appear accounts for the high death rate associated with this problem.

The appearance of medical complications are secondary to the primary nature of alcoholism. With proper evaluation and diagnosis of the problem, many alcoholics can avoid the more serious medical complications by becoming involved in a program of recovery. The following table illustrates some of the problems both by general symptoms and the major body systems that are caused in the late stages of alcoholism. While many of the terms and vocabulary used can be quite technical, it is important to know such terms and conditions in order to understand the nature of the long-term problems that alcohol can cause to the human body.

I. GENERAL APPEARANCE

A. Hand Tremor

Part of alcohol withdrawal. Can begin within hours after cessation of alcohol intake. Mild expression of withdrawal.

B. Excitability, Irritability, Nervousness

This stems from the sedative effect of alcohol being removed - the body rebounds from depression of the central nervous system to stimulation. This may also be part of first stage alcohol withdrawal, resulting from the decrease of alcohol in the blood stream. Also caused by lack of sleep; alcohol can cause a disturbance in REM sleep. REM sleep is necessary for the body to physically and psychologically recover each and every day.

C. Jaundice

The result of liver damage. The yellow color comes from the pigment found in bile, a digestive juice made by the liver (the liver secretes 500 ml of bile/day). Bile is handled improperly and thus begins to circulate in the bloodstream, causing the skin color to change to yellow

D. Rosacea, Seborrheic Dermatitis (dry, red, itchy skin)

Caused by a nutritional deficiency, especially B vitamin, as well as poor personal hygiene

E. Parotid Swelling

Alcohol affects salivary glands which leads to an increased stickiness of saliva, causing blockage of salivary ducts and a mumps-like appearance due to swelling of parotid gland.

F. Finger Clubbing

Referred to as "Drumstick" disease. Tips of fingers swell, causing a puffiness that covers the fingernails. The cause is alcohol cardiomyopathy, resulting in poor circulation to extremities.

G. Rhinophyma ("Drinker's Nose")

A painless increase in nasal sweat glands which causes an increase in the size of the lower part of the nose.

II. GASTROINTESTINAL TRACT

A. Dyspepsia

A general feeling of discomfort after eating. Due to imperfect digestion (not an illness itself, but a symptom of one). A sign of gastritis, which is inflammation of the stomach and is the most common GI ailment stemming from alcoholism.

B. Nausea & Vomiting

Vomiting has been referred to as the body's "housecleaning" - when the body is unable to process food in the stomach, the system tends to force its removal. Also a sign of gastritis.

C. Recurrent Diarrhea

Alcohol changes the motility of the intestinal tract. The first 16 to 20 inches of the small intestine are impacted. Once the stomach deposits chyme (gruel-like material produced by gastric digestion of food) in the small intestine, the body should begin to absorb the necessary food stuff for use and storage. Alcohol in the blood stream inhibits the small intestine from absorbing certain minerals and nutrients from the chyme, causing it to function improperly. Beyond that point, alcohol causes an increase in the rate of propulsion of food through the small intestine. This results in malabsorption of food in the remainder of the small intestine.

D. Recurrent Abdominal Pain

Alcohol causes inflammation of stomach and colon.

E. Acute & Chronic Pancreatitis

About 50% of all cases of pancreatitis are alcohol related. Alcohol has a direct toxic effect on the pancreas, causing changes in the secretions of the pancreas. Increased secretion of digestive juices can produce pancreatic irritation and damage. Most researchers believe that the disease-causing mechanism is the alcohol-induced increase in protein concentration in pancreatic juice - precipitates and clogs the ducts of the organ.

1. Acute pancreatitis

Most often seen in men, 26-65 years of age, with a minimum of 5-10 years of active drinking.

Symptoms: Constant, severe epigastric pain which may radiate to the back; nausea and vomiting. Usually begins one or two days after heavy use.

2. Chronic pancreatitis

Gradual, subtle onset with severe pain

F. Hypoglycemia & Hyperglycemia

Alcohol causes rapid change in blood sugar - with the increase of alcohol in the blood stream, the pancreas responds with an increased output of insulin that leads to a decrease of blood sugar. This decrease causes the liver to produce glycogen to replace the lost blood sugar, generally resulting in an increase in blood sugar.

G. Gastrointestinal Bleeding

Prime cause is the destruction of the stomach lining due to an increase in stomach acids. This may also result in ulcers, causing additional bleeding.

H. Liver

Metabolizing alcohol is always a priority for the liver (approximately 1/2 ounce of ETOH per hour). The toxic effects of alcohol can cause several problems, even with proper nutrition:

1. Alcohol fatty liver - Liver overproduces glycogen to compensate for lost sugar in bloodstream; Metabolism of alcohol leads to accumulation of free fatty acids which leads to an increased concentration of fat in the liver.

Signs and Symptoms: liver enlargement; changes in liver enzymes (detectable on a routine lab examination).

2. Alcoholic hepatitis - Syndrome of necrosis (cell death) and inflammation may occur rapid or over a long period of time.

Signs and Symptoms: Hepatomegaly (enlarged liver), jaundice, liver pain, fever, leukocytosis (increased WBC's), ascities - cirrhosis may result from this condition.

3. Cirrhosis - Advanced necrosis with resultant scarring associated with formation of nodules - generally irreversible to 100%, though liver can reproduce tissues to restore a greater level of health with abstinence.

4. Ascites - the accumulation of fluid in the abdominal cavity. Due to an increase in the size of the liver and compression of the liver on blood vessels, resulting in the leakage of fluid from the liver into the abdominal cavity. A tell-tale sign of this condition is the wave-like action of the abdominal cavity when tapped, as well as the skin tone appearing paper thin and glistening.

III. CARDIOVASCULAR

A. Palpitations

Irregularity in heartbeat occurs both in patients with alcohol related diseases and in other individuals during alcohol intoxication.

B. Cardiomyopathy

Otherwise known as heart disease - one out of thirty-six alcoholics develop this condition

Signs and symptoms: Chronic shortness of breath and signs of congestive heart failure.

C. Anemia

Alcohol inhibits the bone marrow's ability to use iron in making hemoglobin, the oxygen-carrying part of blood. B12 not taken in or poorly stored which leads to immature RBC's or WBC's. Incomplete production of red blood cells; defect in RBC maturation leads to macrocytosis (enlargement) and increased Mean Corpuscular Volume (MCV). Bone marrow is sedated by alcohol - unable to produce as many RBC's or WBC's. Three drinks destroy as many platelets as you can make in one day. This leads to bruising and high clotting times.

D. Dilation of Blood Vessels

Alcohol causes peripheral blood vessels to dilate and leads to a loss of body heat. Many people drink straight spirits in cold weather to increase warmth when in reality alcohol causes the body to lose its internal heat. Such an effect can lead to frostbite. Body temperature regulate is also impaired.

IV. RESPIRATORY SYSTEMS

A. Chronic Obstructive Airways Disease (COAD)

Related to loss of air capacity of lungs and loss of elasticity - alcohol contributes to this. Alcohol has a direct toxic effect on lung tissue and kills the alveoli (air sacs) in the lungs.

B. Recurrent Chest Infection and Pneumonia

Alcohol dries lung tissue and bronchi and causes them to become irritated and inflamed and susceptible to infection. Alcoholics have decreased ability to fight infections due to suppression of the immune system (decreased WBC's and macrophage). Alcohol has a numbing effect and makes it hard to get secretions out of the lung.

V. CENTRAL NERVOUS SYSTEM

A. Impact on Neurons (Brain Cells)

It has long been estimated that each drink of alcohol kills approximately 10,000 neurons. Recent scientific findings now suggest that the cells may not actually die, but be "disconnected" as a result of drinking and not be able to perform their tasks. Either way, neurons are specialized cells that do not reproduce. Alcohol thickens the conductive material between brain cells, slowing down electrical impulses - cell has trouble referring impulses from one cell to the next. Damage to the brain caused by alcohol particularly affects the frontal lobes, making a person unable to give up behavior patterns which are harmful. He is unable to make long-range plans and use intellect for decision making. May take up to two years for all functions to return, if they do at all.

B. Short-Term Memory Impairment

Alcohol interferes with brain functioning and can cause loss of memory, particularly for recent events. Chronic drinking for ten days or more leads to impaired protein synthesis which leads to brain cell damage. Memory tends to return to normal after a period of abstinence from alcohol.

C. Blackouts

Short-term memory loss is like a period of amnesia. Quantity of alcohol consumed seems to have no direct relationship to frequency of blackouts.

D. Seizures

Tend to occur from 7-48 hours after cessation of drinking. Commonly of the grand mal type, but can also be petit mal seizures: 1-3% of all chronic abusers will have seizures. Chronic alcoholism results in an abnormally elevated seizure threshold followed by a period of lowered seizure threshold; this, plus decreased blood alcohol level, altered electrolytes, and decreased blood glucose, can lead to seizures.

E. Peripheral Neuropathy (nerve disease)

Vitamin B deficiency, especially thiamine, leads to peripheral neuropathy (tingling and numbness in hands and feet). Vitamin B deficiency leads to impaired production of the enzymes needed for maintaining the covering of the nerve cells. This loss causes destruction of nerve cells which results in tingling and numbness, as well as muscle weakness.

F. Ataxia (Loss of Balance)

Results of peripheral neuropathy (nerve damage)- loss of balance and coordination occurs which results in the characteristic of the "wide based gait" in order to keep balance. Late onset, generally develops over months of use, a result of vitamin B deficiency

G. Insomnia, Nightmares

Large amount of alcohol disturbs REM sleep. Brain forces REM sleep, resulting in dreams that are intense, nightmare in quality.

H. Hallucinations

Basically means that the brain is so sick and irritable that it sees, hears and feels things that aren't there. Agitated condition breaks through because alcohol has raised agitation so high that no amount of current sedation can reduce it

I. Delirium Tremens

Late stage withdrawal phenomenon. Sensory input plus motor output has become tremendous, and alcoholic is unable to stop moving.

All four stages of withdrawal present:

1. Hyperarousal,
2. Hallucinations,
3. Convulsive seizures,
4. Delirium Tremens.

Observable features include restlessness, increased blood pressure (especially diastolic reading), increased pulse and low-grade temperature.

J. Wernicke Syndrome, Korsakoff Psychosis

Both caused by nutritional deficiencies, especially the loss of thiamine, plus toxic effects of alcohol on nerve tissue

1. Wernicke Syndrome - Injury to the brainstem and areas near the third and fourth ventricle of the brain - results in:

Diplopia (double-vision),
Hyperactivity and delirium. Responds rapidly to vitamins - this condition is reversible with vitamin replacement.

Signs and symptoms: Confused, delirious and apprehensive. Characteristic dysfunction: Nystagmus (eyes do not track together), ataxia.

2. Korsakoff Psychosis - Chronic brain damage caused by thiamine deficiency. Sludging of dead red blood cell components in small capillaries results in cell and tissue destruction due to hypoxia (lack of oxygen); Damage occurs to the cerebral cortex and peripheral nerve tissue.

Signs and symptoms: Severe disorientation, delirium, memory loss and confabulation (hallmark sign - due to memory loss, the individual generally makes up elaborate stories to cover the loss or to fill in holes in the memory).

VII. MUSKULOSKELETAL

A. Muscle Atrophy

Wasting of muscles due to improper nourishment to muscle tissue - can result in acute pain in upper arms, shoulders and pelvic area.

B. Alcoholic Myopathy

Long-term alcohol use produces increased levels of enzyme serum creatine and phosphokinase, resulting in muscle cramps, weakness.

Acute symptoms:

- Sudden onset of weakness - may be acute pain in skeletal muscles;
- Follows drinking bout;
- Involves proximal muscles, extremities, pelvic and shoulder girdle, muscles of the thoracic cage.

Chronic symptoms:

- Muscle weakness involving muscle groups as listed above, but without pain or tenderness;
- Enzymes on blood test are not elevated, making it difficult to diagnose the problem, especially if the person denies drinking.

C. Nephritis (Inflammation of the Kidneys)

Kidneys fail to operate efficiently, leaking out blood cells, albumin, etc. May result in a red color to the urine.

D. Amenorrhea (Loss of Menstruation)

Alcohol interferes with the absorption of calcium which is needed for the ovaries to work efficiently. Use of alcohol may cause women to skip menstrual periods. Alcohol interferes with the absorption of calcium which is needed for the ovaries to work efficiently. Not as much known about women's disorders in general since the increase of women in treatment is relatively new, and research is lacking.

E. Impotence

Use of alcohol decreases testosterone, increases estrogen in the male (liver fails to work properly to assist in sex hormone levels). Results in feminization features (loss of facial hair, possible breast enlargement). Alcohol also has a direct toxic effect on testes and leads to a decreased plasma testosterone, decreased fertility and atrophic (shrunken) testes.

VIII. GENITOURINARY

A. Polyuria (increased urine flow)

Alcohol has a diuretic effect while blood alcohol increases. Diuresis caused by suppression of the release of anti-diuretic hormones from the pituitary gland. ADH allows kidneys to filter water from urine, reabsorbing water and moving urine to bladder for disposal. With loss of filtering ability, the kidneys pass the water with the urine, generally causing an increase urge to void. Extent of diuresis is dependent on a rising blood alcohol condition and the rate of rise. As BAC becomes steady or falls, effect is reversed and the body actually can cause the retention of urine and exacerbation of urinary tract infections and/or prostatitis.

B. Electrolyte Imbalance

Excretion of sodium and chloride is decreased due to drinking. Alcohol causes the loss of magnesium which leads to restlessness, mental slowing.

IX. LAB VALUES TO OBSERVE

Many of the problems and conditions discussed above may not materialize until many years of problem drinking has existed. Waiting for physical conditions to occur before diagnosing the problem of alcoholism has led to the extraordinarily high death rate. Yet current research suggests that various indicators do exist that signal the likelihood of alcoholism. A standard blood test can give an indication of the internal workings of the human body, as well as a look at how alcohol might be causing disruption to the normally healthy systems.

Research suggests that by looking for the following values on a blood test, an effective diagnosis might be reached well in advance of physical tissue destruction:

1. Increased Uric Acid
2. Increased Triglycerides
3. Increased GGT
4. Increased MCV (mean corpuscular volume)(due to cell being deficient in B12 and folic acid - cell has to work harder and grows larger)
5. Increased Alkaline Phosphatase (true in cases of chronic alcoholism)

Studies indicate that when the combination of these values are found, it is likely that alcoholism is the cause in 95% of the cases.