Carbonmonoxide poisoning:

What is carbon monoxide poisoning?

Carbon monoxide (CO) is a gas that's both odorless and colorless. It's found in combustion (exhaust) fumes produced by:

- heaters
- fireplaces
- car mufflers
- space heaters
- charcoal grills
- car engines
- portable generators

Everyone is exposed to small amounts of carbon monoxide throughout the day. However, inhaling too much of it can cause CO poisoning.

CO can increase to dangerous levels when combustion fumes become trapped in a poorly ventilated or enclosed space (such as a garage). Inhaling these fumes causes CO to build up in your bloodstream, which can lead to severe tissue damage.

CO poisoning is extremely serious and can be life threatening.

What are the symptoms of carbon monoxide poisoning?

The most common symptoms of CO poisoning are:

- dull headache
- weakness
- nausea
- vomiting
- confusion
- dizziness
- difficulty breathing.

If we breathe in large amounts on CO, our body will begin to replace the oxygen in our blood with CO. When this occurs, we can become unconscious. Death may occur in these cases.

Risk of carbon monoxide poisoning:

CO poisoning occurs when there's a large amount of CO present in the air. The actual poisoning happens when we breathe in this air, especially if we are in a place that isn't well ventilated.

The risk for inhaling too much CO increases near any of the following:

1. fuel-burning space heater
2. gas stove or stovetop
3. water heater
4. fireplace
5. idling car or truck in a garage or enclosed space
6. furnace
7. recreational vehicles with gas heaters

These appliances typically produce a safe amount of CO. However, the amount of CO in the air can increase quickly if these appliances are used in enclosed or poorly ventilated spaces.

Diagnosis of carbon monoxide poisoning :

If CO levels increase to 70 parts per million (ppm) in blood and above, symptoms become more noticeable. These symptoms may include nausea, dizziness, and unconsciousness.

Treatment of carbon monoxide poisoning :

Treatment may involve:

1.Oxygen treatment:

The best way to treat CO poisoning is to breathe in pure oxygen. This treatment increases oxygen levels in the blood and helps to remove CO from the blood. Oxygen mask and ventilator may be required.

2.Oxygen chamber:

The oxygen chamber has twice the pressure of normal air. This treatment quickly increases oxygen levels in the blood and it's typically used in severe cases of CO poisoning or to treat CO poisoning in pregnant women.

Long-term health risks of carbon monoxide poisoning:

Even minor cases of CO poisoning can cause serious complications. These may include:

- brain damage
- heart damage
- organ damage
- death

Prevention of carbon monoxide poisoning:

To avoid getting CO poisoning, the following preventive measures can be taken:

1. Ensure there's plenty of ventilation in areas with appliances or in a recreational vehicle that burn gas, wood, propane, or other fuel.
2. Buy a CO detector and place it in an area near the source of CO. Make sure to change the batteries regularly.
3. Don't fall asleep or sit for a long time in an idling car that's in an enclosed space.
4. Don't sleep near a gas or kerosene space heater.
5. Don't ignore symptoms of CO poisoning.

Carboxyhemoglobin:

i. Hemoglobin combines with carbon monoxide more readily than with oxygen (210 times as fast) to form cherry-red carboxyhemoglobin.

ii. This reduces the amount of hemoglobin to carry oxygen.

iii. When the carbon monoxide in the inspired air is 0.02%, headache and nausea occur.

iv. In case the carbon monoxide concentration is only 1/120 that of oxygen in the air (about 0.1% carbon monoxide), unconsciousness occurs in 1 hour and death in 4 hours.

v. CO produces toxicity by binding to hemoglobin, thereby reducing oxygen-carrying capacity, and by binding to myoglobin, which may impair cardiac output and result in cerebral ischemia.

vi. Carboxyhamoglobin is a stable compound and it will not dissociate into Hb and co2. Therefore functional haemoglobin will decrease in blood causing aneamia.

vii. Carbon monoxide poisoning may cause death due to furnaces burning in small rooms without ventilation.

Clinical Signs of Variation in Hemoglobin Saturation:

- A decrease in normal oxygenation of blood gives a characteristic bluish appearance to the skin.
- This is said to be cyanosis.
- It is characteristic of cyanide poisoning where respiration is also impaired.
- In severe anemia, the concentration of hemoglobin is too low and cyanosis does not take place although the oxygen content of the blood is reduced.
- In CO poisoning, the formation of cherry- red carboxyhemoglobin often produces a ruddy appearance in the lips.

- Severe CO poisoning results in coma or encephalopathy, but milder intoxication may occur with nonspecific symptoms suggestive of hysteria, hyperventilation, psychosis, or viral syndrome. Survivors of severe CO poisoning may have permanent neurologic or neuropsychiatric effects. Subtle memory deficits or personality changes may not be readily apparent to the examining physician.