**Introduction**

Coproporphyria (CP) is an inherited condition that affects the nervous system and occasionally the skin. It belongs to a group of conditions called the PORPHYRIAS. "Copro-" is the name for the type of porphyrin that occurs in this condition. "PORPHYRIAS" are a group of metabolic disorders caused by a genetic abnormality in the heme synthetic pathway. The result is overproduction of porphyrins and other precursors of the pathway that can accumulate in tissues and are excreted in large amounts in the urine and stool.

Of the 8 types of porphyrias, CP is the most uncommon. It is therefore a rare condition. Another name for coproporphyria is "acute hepatic porphyria".

**Genes**

CP is caused by an abnormality in one of the 8 genes that codes for synthesis of HEME (a component of haemoglobin, the oxygen-carrying molecule in red blood cells). The defective gene is carried in the DNA of the affected person who has inherited it from one parent. The abnormal gene can be passed to the next generation with males and females having an equal chance of inheriting the abnormality (50%). This is known as autosomal dominant inheritance. However, inheritance of the abnormal gene does not mean that symptoms (attacks) will definitely occur. Studies have shown that less than 50% of people who have the genetic abnormality develop symptoms (Werman 1989). This means that a person who suffers attacks of porphyria could be descended from a parent who has the abnormal gene, but has never experienced an attack. Although males and females have an equal chance of inheriting CP, more females experience porphyria attacks than males (3: 2). This is believed to be due to the influence of the female sex hormones.

There are only two ways to diagnose CP: 1) biochemical testing of urine samples during an attack of porphyria, 2) genetic testing (which can be performed at any time). Genetic testing to determine whether a foetus has inherited CP is not yet available but promising research indicates that this may be possible in the near future. The Porphyrin Unit Laboratory at RPAH is currently researching these techniques.

**Cause**

The genetic abnormality affects one of the enzymes (coproporphyrinogen oxidase) involved in heme synthesis, but does not impair heme quality or quantity. Therefore affected patients do not generally suffer symptoms of anaemia. Instead, the faulty enzyme (coproporphyrinogen oxidase) causes accumulation of heme building-blocks (porphyrins) that failed to be incorporated into the heme molecule (Fig. 1). The build-up of porphyrins in the nervous system and skin causes the symptoms. Porphyrin accumulation does not occur in normal people.

**Symptoms**
There are various symptoms which a person can experience during an attack of porphyria however most involve the nervous system and skin. Attacks are rare before puberty and uncommon after menopause. The majority of attacks can be traced to a precipitating factor.

The most common symptoms during an attack of acute porphyria are:
1. stomach/abdominal pain (90% of patients)
2. dark urine (74%)
3. pains, numbness or tingling of arms and legs (40-50%)
4. constipation (48%)
5. nausea/vomiting (43%)
6. hallucinations or mood swings (40%; Bonkowsky 1982)

Others are weakness in arms or legs, loss of feeling in hands and feet, seizures or fits, fevers or chest pain. For most people, mild symptoms are more frequent than acute attacks.

Chronic skin problems occur in 30% of people and may fluctuate in severity. Episodes are not generally related to porphyria attacks. Patients can develop liver disease, but this is later in the condition, and very rare.

**<b>Biochemical Abnormality in CP</b>**

**<b>Precipitants of CP</b>**
Medications, drugs, alcohol, infections, menstruation, pregnancy, fasting and dieting.

**<b>Treatment</b>**
Avoidance of known triggers is a crucial aspect of attack prevention. An attack of severe abdominal pain associated with mental disturbance or nerve abnormality is a MEDICAL EMERGENCY and should be treated at hospital.

**<b>Helpful Advice</b>**
1. Keep the list of "medications to avoid" issued by the Porphyria Unit and show this to all doctors and dentists involved in your treatment. If you go to hospital or are involved in an accident, make sure that all medical staff are informed that you have porphyria. You can wear a Medic-Alert bracelet or carry the Porphyrin Unit Information Card in your wallet.

2. Pregnancy
Pregnancy or menstrual periods can be associated with attacks in some women. Pregnancy is safe for women who have porphyria although they will require special guidance by doctors.

3. Stress/dieting/other illnesses
Sometimes these events can trigger porphyria attacks. It is best to avoid crash dieting or prolonged fasting. Illnesses where there is nausea and vomiting are a common trigger of attacks.

4. Avoid excessive sun exposure, otherwise wear protective clothing.

5. Avoid alcohol if possible.

**<b>Final word</b>**
CP is an important medical condition because porphyria attacks can be very serious. Prevention and early management of attacks is the main goal. With a sensible approach and good medical supervision a person can have a normal lifespan and normal quality of life.

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