

WERNICKE-KORSAKOFF SYNDROME and THIAMINE SUPPLEMENTATION

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Alternative names

Korsakoff psychosis; Alcoholic encephalopathy; Encephalopathy - alcoholic; Wernicke's disease; Wernicke encephalopathy

Definition

Wernicke-Korsakoff syndrome is a brain disorder involving loss of specific brain functions caused by a thiamine deficiency.

Causes, incidence, and risk factors

The syndrome is actually a spectrum, including two separate sets of symptoms, one of which tends to start when the other subsides. This begins with *Wernicke's Encephalopathy* which involves damage to multiple nerves in both the central and peripheral nervous systems. The symptoms that develop at this stage include confusion, delirium, difficulties with vision and eye movement, and muscle unco-ordination. The cause is generally attributed to malnutrition, especially lack of vitamin B₁ (thiamine), which commonly accompanies alcoholism or liver failure. Alcohol consumption resulting in liver failure interferes with the metabolism of thiamine, so even in the unusual cases where alcoholics are eating a balanced diet while drinking heavily, the metabolic problem persists because most of the thiamine is not absorbed. *Wernicke's Encephalopathy* may also be precipitated in at-risk people by carbohydrate loading or glucose infusion. Supplementation with thiamine must precede glucose infusion to prevent this. This is a similar mechanism to that of malnourished patients who develop refeeding syndrome.

Korsakoff Syndrome, or Korsakoff Psychosis, tends to develop as *Wernicke's* symptoms diminish. It involves impairment of memory out of proportion to problems with other cognitive functions. *Korsakoff Psychosis* involves damage to areas of the brain involved with memory. The person may appear cachectic or malnourished. (A nutritional assessment using the MUST score may confirm malnourished state.) Patients often attempt to hide their poor memory by confabulating. The patient will create detailed, believable stories about experiences or situations to cover gaps in memory. This is not usually a deliberate attempt to deceive because the patient often believes what he is saying to be true. It can occur whether or not the thiamine deficiency was related to alcoholism and with other types of brain damage.

Other chronic conditions that may cause a thiamine deficiency include the following: AIDS, hyperemesis gravidarum, thyrotoxicosis, metastatic cancers, long-term dialysis and congestive heart failure (long-term diuretic therapy).

Treatment

The goals of treatment are to control symptoms as much as possible and to prevent progression of the disorder. Hospitalisation is required for initial control of symptoms.

Thiamine may improve symptoms of confusion or delirium, difficulties with vision and eye movement, and muscle un-coordination. Thiamine may be given by injection as Pabrinex[®] or by mouth as thiamine tablets. Thiamine does not generally improve loss of memory and intellect associated with *Korsakoff Psychosis*.

Total abstinence from alcohol is required to prevent progressive loss of brain function and damage to peripheral nerves. A well-balanced, nourishing diet is recommended.

Expectations (prognosis)

Without treatment, *Wernicke-Korsakoff Syndrome* progresses steadily to death. With treatment, symptoms (such as unco-ordinated movement and vision difficulties) may be controlled, and progression of the disorder may be slowed or stopped. Some symptoms, particularly the loss of memory and cognitive skills, may be permanent. There may be a need for custodial care if the loss of cognitive skills is severe.

Complications include:

Permanent loss of memory, permanent loss of cognitive skills, injury caused by falls, difficulty with personal or social interaction, alcohol withdrawal state, permanent alcoholic neuropathy and shortened lifespan.

Prevention

Abstinence and adequate nutrition reduce the risk of developing *Wernicke-Korsakoff Syndrome*. If a heavy drinker is determined not to quit, thiamine supplementation and a good diet may help prevent the development of this condition, but not if damage has already occurred.

Thiamine Supplementation in Wernicke-Korsakoff Syndrome

There is uncertainty surrounding the optimum dose, duration and route of thiamine supplementation in this condition due the lack of controlled outcome trials. Locally, the following recommendations are made:

Hospitalised patients with any signs of *Wernicke-Korsakoff Syndrome* or who are admitted due to excessive alcohol consumption should receive intravenous vitamin B1 supplementation with Pabrinex[®] IV High Potency. Depending on severity, give one or two pairs of ampoules three times a day for 48 hours (six doses) then transfer to oral supplementation (see below). If the patient cannot tolerate oral thiamine then continue with Pabrinex[®] IV High Potency, one pair of ampoules daily until oral intake is possible.

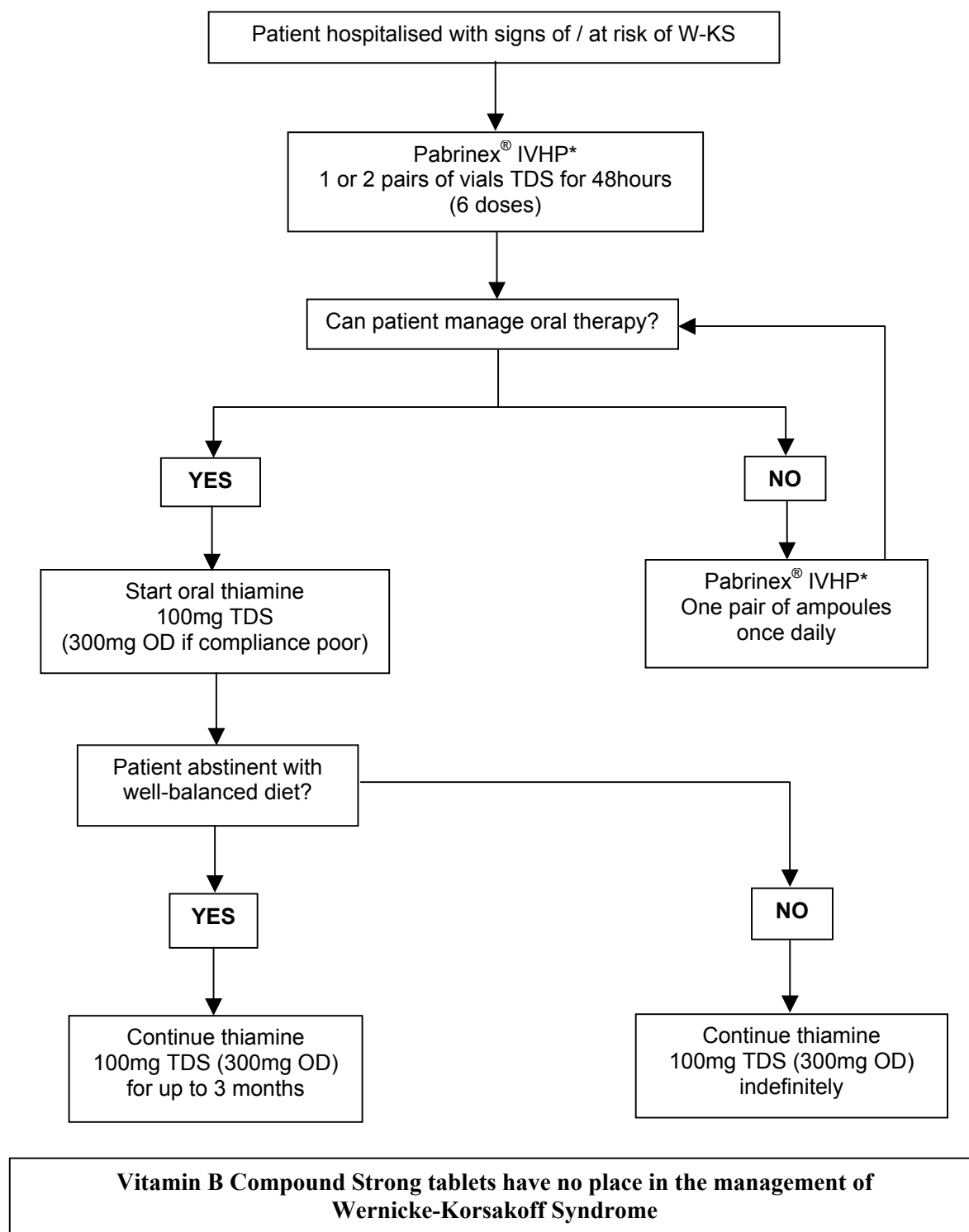
Since potentially serious allergic reactions may occur during or shortly after parenteral administration, it is recommended that parenteral administration be restricted to patients in whom it is essential. Mix the contents of one or two pairs of IV High Potency Pabrinex[®] ampoules in a syringe, add to 100ml 0.9% sodium chloride infusion and administer over 30 minutes. **Facilities for treating anaphylaxis should be available when administered.**

Following the initial parenteral loading, oral supplementation should begin with thiamine 100mg three times a day. In patients who have poor compliance to repeated administration times then a 300mg dose given once daily is suitable. In patients who continue to drink or whose diet is not sufficient to provide enough thiamine then oral treatment should be continued indefinitely at the same dose. Patients who remain abstinent and have a well-balanced diet should continue oral supplementation for up to 3 months.

<p>Vitamin B Compound Strong tablets have no place in the management of Wernicke-Korsakoff Syndrome</p>
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Summary of management

(see text for full details and further advice)



*Since potentially serious allergic adverse reactions may occur during, or shortly after, intravenous administration of Pabrinex®, it is recommended that:

1. Use be restricted to patients in whom parenteral treatment is essential;
2. Give slowly by intravenous infusion (over 30 minutes);
3. Facilities for treating anaphylaxis should be available when administered.