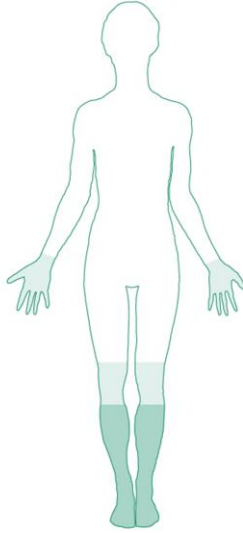
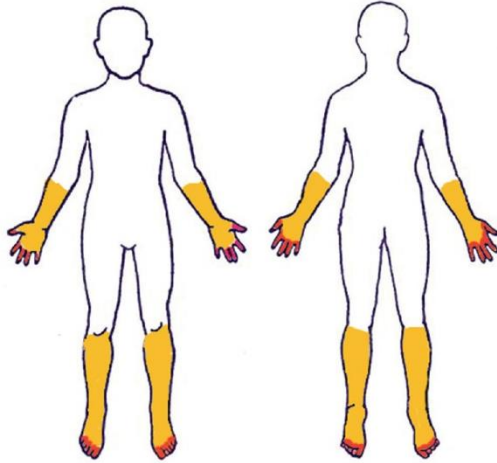




مدينة الملك فهد الطبية  
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# Nutritional Neuropathy



**Malnutrition can affect all areas of the nervous system.**

## **Risk Factors**

- **Alcohol abuse**
- **Eating disorders**
- **Older age**
- **Pregnancy**
- **Homelessness**
- **Lower economic status**

**Any medical condition that affects the GI tract can also impair absorption of essential vitamins.**

**Nutritional deficiencies have been described in patients with inflammatory bowel disease, fat malabsorption, chronic liver disease, pancreatic disease, gastritis, and small bowel resections.**



**Patients receiving total parenteral nutrition (TPN) are also at risk for vitamin deficiency and TPN formulations should be carefully formulated to include supplemental vitamins and trace minerals. Neurological complications following gastric bypass surgery are increasingly recognized.**



## Thiamine (Vitamin B1) Deficiency

**Clinical features of thiamine deficiency begin with:**

- **distal sensory loss**
- **burning pain**
- **paraesthesia**
- **muscle weakness**



**in the toes and feet.**

**There is often associated aching and cramping in the lower legs.**

**If left untreated, the neuropathy will cause ascending weakness in the legs and eventually evolve to a sensorimotor neuropathy in the hands.**



## **Vitamin B12**

**Vitamin B12 (Cobalamin) is present in animal and dairy products and is synthesized by specific microorganisms.**

**Vitamin B12 deficiency has been observed in 5% to 20% of older adults, and up to 40% of older adults have low serum vitamin B12 levels.**

**Vitamin B12 (cobalamin) deficiency is associated with hematologic, neurologic, and psychiatric manifestations.**

**The neuropathy associated with B12 deficiency usually begins with sensory symptoms in the feet.**



## **Vitamin E**

**Vitamin E is an antioxidant and a free radical scavenger, and it is postulated that the neurological manifestations of vitamin E deficiency are primarily related to the loss of this protective function.**

**Fat malabsorption is the main cause of vitamin E deficiency.**

**The principal pathologic features of vitamin E deficiency include swelling and degeneration of large myelinated axons in the posterior columns, peripheral nerves, and sensory roots.**

## Vitamin B6

**Vitamin B6 (pyridoxine) is unique in that either a deficiency or an excess can cause a neuropathy.**

**In adults, neuropathy due to B6 deficiency starts with numbness, paresthesias, or burning pain in the feet which then ascends to affect the legs and eventually the hands.**



## **Nicotinic Acid**

**Nicotinic acid (niacin or B3) deficiency. The classic clinical triad of pellagra is:**

- **Dermatitis**
- **Dementia**
- **Diarrhea**

**Early neurological symptoms are predominantly neuropsychiatric including apathy, inattention, irritability, and depression.**

**Without treatment symptoms can progress to stupor or coma.**



## **Copper Deficiency**

**Copper deficiency has long been recognized as a cause of hematologic abnormalities in humans, but neurological abnormalities due to copper deficiency were not reported until 2001.**

**Majority of patients present with gait difficulty and lower limb paresthesias.**

**Neurological examination reveals loss of proprioception and vibration due to dorsal column dysfunction and sensory ataxia.**

## Neuropathy After Bariatric Surgery

**After bariatric surgery, peripheral neuropathies were the most common and may affect up to 16 % of operated patients.**

**Malnutrition was not uncommon for morbidly obese patients prior to their bariatric surgery.**

**Bariatric procedures cause or worsen malnutrition by restriction of intake or combined restriction of intake and impaired absorption. The most common nutrient deficiencies following bariatric surgery are deficiencies of thiamine, vitamin B12, vitamin E, vitamin D, and copper**



## **Prevention & Treatment**

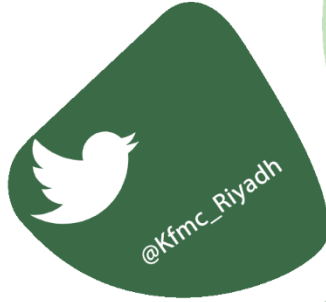
**Nutritional neuropathy can be prevented by having a balanced diet and avoiding malnutrition.**

**Frequent blood test directed towards checking blood levels of this elements and treating adequately, any deficiencies found with proper medication is needed.**

# لأن الوعي وقاية ..

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