Hashimoto's Encephalopathy

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What is Hashimoto’s Encephalopathy?

Hashimoto’s Encephalopathy (HE) is a condition associated with Hashimoto’s thyroiditis (an auto-immune condition affecting the thyroid). HE is believed to be an immune-mediated disorder that affects the central nervous system. The effects on the central nervous system are not related to hypothyroidism (underactive thyroid) or hyperthyroidism (overactive thyroid). The exact relationship to Hashimoto’s thyroiditis is not clear.

Is it common?

In the general population it is thought to be uncommon. A 2006 review identified only 121 published cases. However, a study assessing unexplained neurological symptoms found the prevalence of 2.1 cases per 100,000.

How does it present?

Symptoms may include:
Stroke-like pattern of multiple, recurrent, acute to subacute episodes of neurologic deficits with a variable degree of cognitive dysfunction and alteration of consciousness
A diffuse, progressive pattern, characterized by slowly progressive cognitive impairment with dementia, confusion, hallucinations or somnolence.
Seizures
Myoclonus or tremor
Diffuse increase in reflexes
Psychosis, particularly visual hallucinations but also paranoid delusions

Long-term course of the illness may be self-limited, relapsing-remitting, or progressive.

How is it diagnosed?
The diagnosis is based on the clinical picture, the assessment for other causes and the presence of anti-thyroid antibodies. An elevated level of the anti-thyroid peroxidase antibody (or anti-microsomal antibody) and/or the anti-thyroglobulin is an essential feature of HE.

Additional testing may include”
Cerebrospinal fluid analysis may find:
  o Elevated protein
  o Increased lymphocyte count
  o Normal glucose level
  o Elevated antibody
Electroencephologram
  o Non-specific slowing
  o Focal spikes or sharp waves (consistent with seizures)
MRI of the brain
  o Usually normal
  o May show atrophy
  o May show non-specific abnormalities in the subcortical white matter

What is the significance of the level of antibody?

There is no clear relationship between the severity of the symptoms and the type and concentration of the antibodies. In addition, antibody levels may or may not decrease following treatment.

How is it treated?

HE is usually treated with corticosteroids. Optimal steroid dose has not been defined but oral prednisone doses ranging from 50 to 150 mg per day have been reported. High dose IV steroids have also been used. Symptoms typically improve or resolve over a few months. The steroids are then tapered. The rate of taper and the duration of treatment are generally titrated to the clinical response. In some patients, the duration may be as long as two years.

In light of its responsiveness to steroids and the unclear relationship to Hashimoto’s thyroiditis, another term for HE is Steroid-responsive encephalopathy associated with auto-immune thyroiditis (SREAT).

What are the side effects of the medication?

There are many potential side-effects of corticosteroids. They include:
Weight gain
Elevated blood sugar (and diabetes)
Mood changes and other psychological changes
Osteoporosis
Acne
Hyperactivity
and many others.

Generally, the longer a person is on steroids, the greater the risk for side effects.

Is there a connection between Down syndrome and Hashimoto’s Encephalopathy?

At national Down syndrome conferences over the last several years, physicians from several clinics (including us) have described a small number of patients who have been noted to have significant changes in behavior and decline in cognitive skills. The clinical picture was usually that of a relatively young person (often in the late teens or 20’s). Often times a preceding infection that sounds like a viral illness was described.

Behavioral changes were noted and these could be quite severe. Often the person became withdrawn and some were described as looking like they had developed autism at this stage of life (which does not fit with the usual clinical picture of autism presenting by age 3). Generally anti-depressants, anti-seizure medications, and anti-psychotic medications did not solve these challenges. The changes can last for years. These are understandably disturbing changes and unfortunately, intervention was of limited benefit.

In the last few years, some clinicians and researchers have begun to describe and discuss their diagnostic approach to these patients. The presentation of this smaller group of patients could not be explained by more common causes of psychological and cognitive changes such as depression, hypothyroidism (underactive thyroid), Vitamin B12 deficiency, sleep apnea, and others.

Elevated thyroid peroxidase antibody (or antimicrosomal antibody) and/or anti-thyroglobulin antibody were found in some patients with this previously undiagnosed condition. The clinicians have reported treating these individuals with steroids and have described remarkable improvement in some individuals.

One paper that described two patients reported the following antibody levels:
1. anti-peroxidase antibody: 132 (normal < 35) and anti-thyroglobulin antibody 976 (normal < 40).
2. anti-peroxidase antibody of 87 and a normal anti-thyroglobulin antibody.

I thought Hashimoto’s encephalopathy was always associated with severe symptoms.

We certainly know from other auto-immune conditions that different people are affected to different degrees. For example, celiac disease, the sensitivity to gluten, a protein in wheat, barley, and rye, is thought to be 100 times more common in people with Down
syndrome. People with celiac disease can get symptoms when they eat gluten-containing foods. However, how much each individual is affected varies widely. Some individuals will have very significant symptoms if food containing gluten is prepared in the same dishes as their gluten-free food. Others can eat gluten-containing foods with only very mild symptoms. It may be that there is similar variation for Hashimoto’s Encephalopathy (and more study is indicated).

There are many conditions that tend to affect people with Down syndrome more or less severely. This is an area that certainly deserves more study to improve our understanding of Hashimoto’s Encephalopathy in people with Down syndrome.

The limited descriptions of both individuals who have DS and those without DS do describe a variety of presentations and severity.

Are auto-immune diseases more common in people with Down syndrome?

Several auto-immune conditions are thought to be more common in people with Down syndrome. About 40% of the patients at the Adult Down Syndrome Center have hypothyroidism and of those for whom thyroid antibodies were tested many were positive indicating an autoimmune etiology. Other conditions such as celiac disease, Rheumatoid arthritis, alopecia areata (patchy hair loss), alopecia totalis (total loss of hair) and others that have an auto-immune component are thought to be more common in people with Down syndrome.

What next?

The understanding of the diagnosis and treatment of Hashimoto’s Encephalopathy in people with Down syndrome is relatively new. More study needs to be done to improve our understanding. There is limited available description of the benefit and the complications of treatment in people with Down syndrome. However, early descriptions in some people with Down syndrome have been encouraging.

Careful assessment in making the diagnosis and close supervision of treatment is indicated. Prolonged use of steroids certainly has the potential for significant side effects. However, in the group of patients with symptoms that fit those of Hashimoto’s Encephalopathy and for whom another explanation or treatment has not been found, assessment and treatment for Hashimoto’s Encephalopathy may be a real benefit.


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