A-Z of Symptoms a Quick Guide

It is important to note that not all patients with CDKL5 disorder will have all of these symptoms, this is a guide.

Abdominal Distension

This can be due to aerophagy, which commonly accompanies the abnormal breathing. Very severe cases may be helped by percutaneous gastrostomy, while other cases may also be helped by medication.

Aerophagia

Air swallowing can be significant and can interfere with eating and full respiratory effort.

Altered Pain Response

Inappropriate pain responses are very common in people with CDKL5. This can manifest itself in a number of ways. Parents report that children and adults bite themselves , may tolerate blood tests and lumbar punctures without showing the pain responses that a child of normal development might experience. However, they may cry appropriately when they take a “bump” for example. Altered pain response should be an important consideration when assessing someone with CDKL5 in a clinical setting, such as an emergency department, because although they may appear pain free, this may not always be the case. It has also been reported that some children who have experienced extreme pain, may not always appropriately respond to high dose opiates, and that alternative medication would need to be considered.

Apraxia

Apraxia results from dysfunction of the cerebral hemispheres, especially the parietal lobe, and can be present in people with CDKL5. Apraxia includes limb-kinetic apraxia (the inability to make fine, precise movements with an arm or leg), ideomotor apraxia (the inability to make the proper movement in response to a verbal command), ideational apraxia (the inability to coordinate activities with multiple, sequential movements, such as dressing, eating, and bathing), verbal apraxia (difficulty coordinating mouth and speech movements), constructional apraxia (the inability to copy, draw, or construct simple figures) and oculomotor apraxia (difficulty moving the eyes on command). Apraxia may be accompanied by aphasia. Generally, treatment for individuals with apraxia includes physical, speech, or occupational therapy.

Aspiration Pneumonia

This is due to poor co-ordination of the muscles involved in swallowing. The epiglottis should fold over the trachea, to prevent the food or fluid from being inhaled, but fails to do so. Careful assessment of swallowing by an experienced speech therapist is required. Positioning is key to enhance swallowing, as is the texture of the food and consistency of fluid.

Autistic Features

Varying degrees of social interaction, such as avoidance of eye contact or perseverating on people or objects. Repetitive behaviours may occur such as stereotypies, manic walking and repeated manipulation of objects occur. Other features include difficulty in motor coordination and attention, and lack of safety awareness.

Bone Density

Osteoporosis is not common in CDKL5. However, it should be monitored over time by an endocrinologist especially if there is a suggestion of precocious puberty. Osteoporosis should be considered particularly in those who have never walked or who have sustained a fracture. Bone density is also affected by anti-convulsants. A DEXA bone density scan should be undertaken in the event of a fracture or to provide a baseline for future assessments.

Breathing Irregularities/Hyperventilation

Some people with CDKL5 experience varying degrees of breathing irregularities and these can occur during wakefulness and sleep. Central and obstructive apnoea can also occur.

Bruxism

Tooth grinding can be severe and can also occur during sleep. Involving a specialist dentist is important to prevent tooth decay and enamel problems.

Cardiac Problems

Some people have experienced Long QT syndrome, which is more commonly associated with Rett Syndrome, abnormalities in heart rate such as tachycardia, and non-specific changes relating to T waves. It should be best practice to ensure that individuals with CDKL5 disorder have regular ECG's and echocardiograms.

Constipation

Treat vigorously and actively with a view towards prevention. Bowel habits can change over time and can be a source of pain and discomfort. Even if dietary fibre is adequate, check the daily free water intake, which may be low.

Cortical Vision Impairment (CVI)

CVI is a form of visual impairment which is related to the brain rather than the eyes. For some people with CDKL5 disorder this can be severe, though for some it does seem to improve over time. It is important to diagnose and to allow for therapeutic input from the appropriate specialists. Children with CDKL5 disorder tend to have a distinctive sideways glance.

Epileptic Seizures

Seizures are almost always seen in CDKL5. Studies have suggested that children with a CDKL5 disorder exhibit 3 stages of epilepsy. Stage I is early epilepsy (onset 1 - 10 weeks) with a normal EEG despite frequent seizures. Stage II involves the development of epileptic encephalopathy (developmental epilepsy) with infantile spasms and hypsarrhythmia, being seen in about 50% of cases. Stage III appears as late, multifocal and myoclonic epilepsy, although this may not always be the case. Seizures are often difficult to control while puberty can bring about changes in seizure pattern and activity. Some become seizure free, though the neurodevelopmental issues remain profound.

Feeding Difficulties

Dysphagia is common in CDKL5. Affected individuals may have difficulty with chewing, tongue movement, and swallowing. This may impair adequate nutrition or contribute to respiratory symptoms (aspiration, coughing, or choking during feeding). This may worsen with time with many affected individuals giving up eating altogether. Poor weight gain and episodes of aspiration require fluoroscopic examination and pH studies. In severe cases percutaneous gastrostomy (PEG) should be considered. Persistent reflux may need medication or surgical correction.

Gastrointestinal

Constipation, diarrhoea, intestinal gas and gastric reflux are all common problems. Constipation may not always be palpable, and should not be excluded until a bowel x-ray or ultrasound has been performed. Low gut motility, as well as slow gastric emptying, can also be evident with a child with CDKL5. There is anecdotal evidence that individuals with CDKL5 may be more susceptible to volvulus, and intussusception. Therefore with a rapid clinical deterioration with no apparent cause, there should be a high index of suspicion.

Impaired Sleep

This includes night terrors, inappropriate laughing and jerking. Once awake, children with CDKL5 can take a long time to fall asleep again due to irregular breathing patterns, seizure activity and general restlessness. Many people with CDKL5 disorder will have significant impairment of sleep; they have days and nights with no sleep, but can also go for a couple of days where they sleep continuously. Many families use medication in order to aid sleep in the form or melatonin or benzodiazepines.

Mobility

There is a wide range of ability; some affected patients will never walk, whilst others walk. Some have almost no hand skills while others perform some purposeful actions. Hypotonia is seen almost universally. It is important for the child to be seen regularly by orthopaedic specialists and physiotherapy. They need assessments for scoliosis, hip alignment and joint laxity.

Mood Lability/Involuntary Behaviours

Many families report inconsolable crying, laughing and erratic behaviour for no apparent reason. Although as the child gets older the families are able to interpret the crying as being related to pain, gelastic seizures, or sub-clinical seizure activity. A person reporting to medical services with severe crying should receive full work-up to exclude illness or possible gastrointestinal obstruction. Mood lability has been reported by parents, as going on for days with extreme shifts in the mood from elation to depression within the same day.

Range of Motion

Contractures develop over time. Check for full passive range of motion. Reduction in Occupational and Physiotherapy services over time can lead to lack of awareness of this complication.

The Spine: Scoliosis/Kyphosis/Lordosis

The chance of developing scoliosis increases with age, although statistics are not yet available as to the precise risk. There should be close monitoring of the spine for the development of a deformity. If detected then referral to a spinal surgeon is recommended.

Stereotypies

A challenge for many children with CDKL5 is repetitive and restricted behaviours (RRB). Some examples are continuously mouthing objects and hands, rocking, head swaying, hand flapping and clapping, also common in autism and Rett Syndrome. Similar to obsessive compulsive disorder (OCD), repetitive behaviour appears to represent a need for sameness and a resistance to novelty in which some children with CDKL5 may resist obstruction or interruption of their rituals. No one really knows why they happen and there is little consensus about treatment. However, most professionals label RRBs as purposeless and maladaptive. Alternative views consider the person may be seeking sensory (self-) integration or pleasurable sensations, or creating distraction from stress, or that the repetitive behaviour is being triggered by a possible underlying biomedical cause such as neurological dysfunction. Hand stereotypies within CDKL5 are very common. These manifest as finger tapping, hand mouthing, finger sucking and hand wringing. People with CDKL5 may hand mouth during feeding therefore, arm splints may be useful to enable effective feeding.

Many people with the disorder have non-functional hand use. However, therapy should be provided to encourage hand use.

Vasomotor Disturbances

Sympathetic tone is high, due to poor autonomic restraint. Treat the skin gently, encourage activities using the whole body, and ensure that hands and feet are kept warm even in the summer. Even with warm clothing the person with CDKL5 may still have cold extremities.