Tiptoe Walking Requires Evaluation After Age 2

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Tiptoe walking in young children is troubling to parents, but an extensive evaluation is necessary only in those over age 2 years, Stephen Stricker, M.D., said at the annual Massachusetts Medical Society Conference sponsored by the University of Miami.

Before age 2 years, walking on the toes is considered a normal behavior. After that age, concerns arise about potentially serious or psychiatric problems, said Dr. Stricker, chief of pediatric orthopedics at the university.

Unilateral tiptoe walking is usually a result of leg length discrepancy, spastic hemiparesis, or Achilles tendinitis. Less often, it is associated with calf hemi- gioma, linear scleroderma, or conversion reaction.

Bilateral tiptoe walking also is typically idiopathic, but can be associated with spastic diplegia. Less common causes are peripheral neuropathy, muscular dystrophy, psychosis, learning disorders, and spinal cord anomaly, Dr. Stricker said.

Four basic questions can help in making the differential diagnosis. These include:

- When was the onset of tiptoe gait?
- Early onset tiptoe walking—defined as tiptoeing from initial ambulation or within 3 months of initial ambulation—usually is idiopathic or associated with spastic diplegic cerebral palsy.
- Late onset tiptoe walking—defined as tiptoeing which begins 4 or more months after initial ambulation—usually indicates a neuromuscular problem such as Charcot-Marie-Tooth disease, Duchenne’s muscular dystrophy, or a focal cord anomaly, and requires evaluation by a pediatric neurologist, Dr. Stricker said.
- Is there a family history of toe walking?
- Is there a history of similar behavior in normal children who should have 10 degrees of dorsal flexion. Proper measurement of dorsal flexion requires that the knee be extended, and the midfoot stabilized, using the thumb (allowing midfoot pronation will falsely add 5 to 10 degrees of dorsal flexion). If you are unable to flex the ankle to neutral in this position, the Achilles tendon is tight.

Consider referring children older than age 2 years with tiptoe walking for evaluation by a neurologist, psychiatrist (particularly if there is a family history of psychiatric disorders), and orthopedist, Dr. Stricker advised.

Treatment depends on the cause and type of tiptoe walking.

- Dynamic Achilles contracture—this is also known as overactive gastrocnemius—might be managed with observation (idopathic cases have been shown to resolve over time and to be clinically undetectable at 15 year follow-up); serial casting; botulinum toxin injections; gastroc recession (although his own studies have shown a 30% recurrence rate with this procedure, Dr. Stricker noted); or bracing. This is true for both idiopathic cases and spastic diplegic cases with this type of contracture.
- Static Achilles contracture—this is known as tight gastrocnemius—might be treated with gastroc recession or Achilles tendon lengthening in those with idiopathic and spastic diplegic tiptoe walking.

There are few data on treatment of psychiatric tiptoe walking, but generally this is treated the same as idiopathic tiptoe walking. Outcomes, however, are less predictable in these patients, Dr. Stricker noted.

In those with Charcot-Marie-Tooth disease, treatments include ankle-foot orthosis splinting, plantar fasciectomy, tendon transfers, and foot ostotomies. In Duchenne’s muscular dystrophy, therapy may include ankle-foot orthosis splinting, or early surgery to lengthen the Achilles tendon or perform tendon transfer.