Pediatric Flatfoot Deformity Case Study
Evaluation and Management
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A thorough history and physical examination of these children is paramount. Standing exam and gait analysis is recommended. Body habitus, limb alignment should be noted as well (1). Radiographs in a weight-bearing fashion should be obtained (5). As a clinician, one needs to determine whether the deformity is pathologic or non-pathologic, rigid or flexible, functional or nonfunctional, symptomatic or asymptomatic (1). A calcaneovalgus foot deformity presents with a flexible, deformity which is easily manipulated. The foot can be easily dorsiflexed/plantarflexed against the leg and subtalar joint range of motion is normal. This deformity is usually asymptomatic. Musculoskeletal structures are normal in length. There are no associated dislocations and is thought to result from intrauterine position. Orthotics and bracing may help alleviate symptoms (9). Congenital vertical talus (CVT) typically presents with a symptomatic deformity that is rigid in nature. ‘Rocker-bottom’ appearance is common in these patients regardless of foot type, midfoot versus forefoot. Differential diagnosis includes calcaneal valgus, congenital vertical talus, flexible flatfoot, accessory navicular, talus coalition, and slantfoot. We present the case of a 5 year old male who presented to our clinic with chronic foot pain and severe flatfoot deformity. The patient had no previous neuromuscular disorders or significant past medical history. The patient’s history and radiographic findings are reported and treatment plan is outlined.

On physical exam, vascular status was intact and neurological exam was normal. Dermatological exam revealed no relevant findings. On musculoskeletal exam, muscle strength was rated 5/5. Anteplantarflexion was noted 5/5. No signs of apparent coalition. Planterflexed, lateral views reveal the talus displaced posteriorly and extensor digitorum longus anteriorly. Treatment usually consists of casting followed by surgery when conservative treatment fails (6). We refer to the case history and radiographic findings of the patient for further evaluation.

Literature Review:

Pediatric flatfoot deformity can also present as a rigid flatfoot. The coalition may be osseous, fibrous, or cartilaginous. Talocalcaneal and calcaneonavicular coalitions are most common. Decreased subtalar joint range of motion is present with pain associated with inversion. Radiographic signs may include talocalcaneal coalition, talocalcaneal coalition with posterior calcaneal beaking, talocalcaneal coalition (SCC), talocalcaneal coalition with anterior calcaneal beaking. The C-sign is the gold standard for diagnosis (5).

Accessory navicular typically presents with an asymptomatic flexible foot that may or may not have an associated pes planus depending on the child's condition. Patients that are symptomatic will have tenderness and erythema over the navicular tuberosity (1) and pain with pull of the posterior tibial tendon. Patients that are symptomatic will have limited inversion and eversion of the calcaneus and subtalar joint. Talocalcaneal coalition consists of casting followed by surgery when conservative treatment fails (5).

REFERENCES:


Discussion:

Pediatric flatfoot deformity is an entity commonly seen in orthopedic and podiatric practices alike. The orthopedic and podiatric clinics have been referred to as “the child’s role to inform concerned parents that the majority of children will have a pes planus foot type that should resolve with time. Evans et al reported that half of all young children have a flatfoot but this number will reduce by 50% as these patients mature (4). The majority of patients will not need to be treated but those that do may require conservative and/or surgical correction. The clinician must always be aware of pathologic flatfoot deformities that may be debilitating if left untreated. As a clinician, one needs to be aware of randomized controlled studies in regards to orthoses for the treatment of the pes planus foot type. Orthotics are not recommended for children that are asymptomatic. References in this same article, children who wear shoe gear often before the age of six have a higher incidence for a pes planus foot type that has unshared counterparts (4).

Treatment of pediatric pes planus depends on the degree of deformity and symptomatology. Initial treatment should consist of mobilizing activity and non-steroidal anti-inflammatory medications as necessary (2). Stretching regimens may be implemented if an equinus deformity is a cause for abnormal pronation and subsequent pes planus. Physical therapy should be started when muscle weakness is noted and signs and symptoms are present. Treatment may provide some relief despite limited level one studies (1). In an article by Evans and Rome in 2006, three randomized controlled studies were analyzed that evaluated the effect of foot orthoses on the pediatric flatfoot. One study showed that children with juvenile rheumatoid arthritis treated with orthoses had a reduction in pain and improved quality of life. Two other studies of children with typical pes planus and/or promoted flatfoot type treated with orthotics versus controls showed significant differences in foot type, midfoot versus forefoot, and physical performance. However, the latter two studies did show a reduction in foot pain through this was more of an observed rather than quantitative data (6).

As reported in a Cochran Review orthotics should not be used in children that have a asymptomatic flexible flatfoot as the deformity will reduce with age. Orthotics should only be used in children that are symptomatic. Reference in this same article, children who wear shoe gear often before the age of six have a higher incidence for a pes planus foot type that has unshared counterparts (4).

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