REVIEW ARTICLE

Management of Complex Regional Pain Syndrome (CRPS) in Children

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INTRODUCTION

Chronic pain (CP) is a frequent medical ailment in children. In a Dutch study, 54% percent of children had reported experiencing pain within the previous three months, >50% patients experience pain at multiple sites and about 1/3rd of them experience multiple episodes and have intense pain.[1] In children, it has intense adverse effects on many biological, psychological and environmental processes.[2] In addition, there are differences pain experiences, reporting methods and coping strategies in adults and children[2].

Complex regional pain syndrome: Complex regional pain syndrome (CRPS) is well defined in adult people, but very scare data is there regarding prevalence of CRPS in pediatric population[3]. CRPS in children and adolescents has distinct epidemiological features. CRPS type 1 is more common in girls than boys (6:1) while CRPS type 2, a rare entity, presented with equal incidence in boys and girls.[4] A recent study from Australia reported that among pediatric patients with CRPS, 90% were girls, lower limbs were affected in 85% of cases, and most typically (80% of the time) precipitated by minor trauma or sometimes presented without a history any noticeable injury[5].

Diagnosis of CRPS: As in adults, the diagnosis of CRPS is based on clinical signs and symptoms. The IASP criteria and proposed new criteria for CRPS have been extensively validated in adults[6,7]. However in pediatric patients because of lack of such validation studies the IASP criteria has been used in the literature[3].

Typical clinical signs and symptoms of CRPS in adults include allodynia, paresthesias, dysesthesias, and variable combinations of neurovascular disturbances (coldness, mottling, nonarticular swelling, cyanosis or rubor, delayed capillary refill), sudomotor disturbances, motor abnormalities, (spasms, dystonia, "Jumping movements"), and trophic changes including atrophy, abnormal hair growth, or joint contracture.[8] Tan et al. compared clinical presentation of CPRS in adults with that in children. The authors reported a reduction in skin temperature at onset of pain (with more cooling effect at lower extremities), while the sympathetic and neurologic symptoms were less prominent[9]. Sethna et al. evaluated 42 patients of age 7-17 years having unilateral CRPS of lower extremity, they performed the neurologic and quantitative sensory testing (QST) and compared it with normal individuals, most QST parameters were unchanged in both groups except cold and heat pain detection thresholds. Specifically, cold allodynia was observed, and a number of participants showed a combination of dynamic mechanical allodynia and hyperalgesia to pinprick[10]. In another study by Stanton et al. reported change in skin colour in 90% children, temperature imbalance and oedema in 85% children and reduction in range of motion in and allodynia in 100% children[3].

Psychological Dysfunction in Children of CRPS: There is much controversy exists related to the presence of psychological dysfunction prior to the development of CRPS in children. Low et al. found no psychiatric disorder among children in their study in fact 55% were categorized as high achievers regarding their psychological profile.[5] Similar findings were presented in the study by Stanton.[3] However, some studies reported that abnormalities were more frequently detected during psychological examination; recurrent themes comprise presence of family dysfunction, lack of self-confidence, non-verbalization of feelings, and performance pressure in school and sports.[11] Chronic pain has been associated with more frequent school absences and academic difficulties. Missed school can have direct effect on academic performance and school success as well as important effects on socialization and maintenance of peer relationships[12,13].

Management of CRPS: Early diagnosis of CRPS and management is crucial for the outcome. Unfortunately, diagnosis in often delayed in pediatric population and CRPS is still affecting larger number of children. The authors reported less remission rate 10.6 weeks in children with early diagnosis (<3 months) as compared to 21.5 weeks in children in whom CRPS was undiagnosed in first presentation[3].

For majority of children with CRPS, an effective treatment program emphasizes patient and parent education about the non-protective character of the pain, intensive rehabilitation that involves active exercise, resumption of weight-bearing, desensitization, and psychologic interventions based primarily on individual and family-based CBT[12]. For some children this can be accomplished on an outpatient basis[14]. For others who fail to improve with outpatient treatment, a next step is to do this type of multidisciplinary rehabilitation program in an inpatient or intensive day-hospital program[15]. Good results have been achieved with the combination of physiotherapy and psychological intervention[5,15]. Psychological intervention aimed to improve skills in managing pain and other stressful situation[5]. Addition of pharmacological intervention has been proposed in the form of amitriptyline and gabapentin. Both of these medications were found to be effective in improving pain with minimal adverse effects, improving compliance with physiotherapy[5].

There is no empirical evidence available supporting the sympathetic blocks or other procedural interventions such as spinal cord stimulation (SCS) in the management of CRPS in children. Data regarding the use of TENS comprising of few case reports only. However, a common recommendation from the experts is that the use of regional anesthetic approaches should be reserved for

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those patients who fail to progress despite a very good rehabilitation program and for selected patients with very severe limb swelling, dystonia, or very limited limb movement.[12] Furthermore, the use of continuous catheter techniques rather than single-shot blocks were highly recommended[3,12]. Finally, SCS should be used as the last option when all modalities and management strategies of CRPS found unsuccessful[3].

Reoccurrence: Another important problem associated with the management of CRPS in children is 20 to 30% of relapse rate with the exacerbation of symptoms[3,15] Although recurrence is common, it generally seems to respond more readily to physical therapy and related treatments than the initial episode.[15]

CONCLUSION

Complex regional pain syndrome is a distressing pain condition in children and adolescents. CPRS has biopsychosocial and environmental consequences and should be managed by taking same biopsychosocial approach as suggested for adult patients. Early diagnosis and timely management has promising results.

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