Special Interest Group on Pain in Childhood
INTERNATIONAL ASSOCIATION FOR THE STUDY OF PAIN

Pediatric Pain Letter
Commentaries on pain in infants, children, and adolescents

October 2015 **Vol. 17 No. 3** **www.childpain.org/ppl**

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Commentary

Posttraumatic stress disorder in children with chronic pain

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Prevalence estimates of posttraumatic stress disorder (PTSD) in adults with chronic pain have ranged from 10% to 50% (Asmundson et al., 2002; Roy-Byrne et al., 2004; Sharp, 2004; Burris et al., 2009). Similar prevalence estimates with children are lacking. However, given that the two conditions may share vulnerability factors (e.g. anxiety sensitivity), causal triggers (e.g. traumatic injury), and maintenance factors (e.g. fear avoidance, attentional biases), high comorbidity between PTSD and chronic pain in children is likely (Otis et al., 2006). When chronic pain and PTSD co-occur, they may interact and lead to a heightened manifestation of each condition (Gold et al., 2008). The current article describes the expression of PTSD in children who present with chronic or complex pain conditions and provides evidence-based recommendations for the assessment and treatment of comorbid PTSD and chronic pain within the pediatric clinical setting.

PTSD expression in children

PTSD in children is defined by exposure to the threat of or actual death, serious injury, sexual violence either directly or witnessing others and exposure or learning that a traumatic event occurred to someone very close, such as a parent or caregiver (American Psychiatric Association [APA], 2013). Key characteristics of PTSD in children include, intrusive symptoms (e.g. recurrent and intrusive distressing memories of the traumatic event), avoidance of the event (e.g. avoiding places, memories or emotions that may act as a reminder of the event), negative alterations in thoughts and mood (e.g. increased frequency of fear or sadness, inability to recall important aspects of the event), and hyperarousal (e.g. irritability, sleep disturbance).

Of note, there may be differences in how posttraumatic symptoms manifest in preschool-aged children relative to older children (Scheeringa et al., 2003). In preschool-aged children, PTSD reactions may manifest as excessive clinginess to caregivers, regression or loss of previously mastered developmental skills (e.g. speaking, new-onset bedwetting), frightening dreams without recognizable content, trauma-specific re-enactment play or repetitive play in themes of the traumatic event (Australian Centre for Posttraumatic Mental Health [ACPMH], 2013; APA, 2013). In older children and adolescents, PTSD presentations are similar to adult reactions. These presentations are more likely to include displaying feelings of guilt (e.g. survivor guilt), substance use, and disruptive and disrespectful behavior.

Prevalence of PTSD in children

Research indicates that lifetime prevalence estimates of PTSD in children and adolescent are as high as 6% in the general population (Kilpatrick et al., 2003; ACPMH, 2013), with up to two-thirds of US children reportedly having experienced a traumatic event during their childhood (Copeland et al., 2007). Additionally, research suggests children may be more affected by traumatic events than adults and thus more susceptible to the development of PTSD (Ziegler, et al., 2005; ACPMH, 2013). However, one study found that PTSD was rarely assessed by doctors in a pediatric Emergency Department, which suggests that PTSD in children is likely underdiagnosed (Ziegler et al., 2005).

Expression and prevalence of PTSD in the chronic pain setting

The onset of PTSD in individuals with chronic pain may be the result of a wide range of factors, including physical trauma (e.g. medical related, injury-related or abuse), sexual trauma or psychological trauma, these being either acute traumatic events or more chronic traumatic experiences. The symptoms of PTSD may result either directly from the pain experience, from a trigger that also caused the pain (e.g. an injury) or from a trigger unrelated to the pain (e.g. sexual abuse). Within the pediatric literature, there is some evidence documenting possible relationships between abuse history and chronic abdominal pain (e.g. Sonneveld et al., 2013), severe tragedy (hurricane) and somatic complaints including pain (Hensley & Varela, 2008), and exposure to trauma and headaches (Stensland et al., 2013). Notably though, a recent study found that young patients with somatoform disorders (half of which were pain disorders) were no more likely to report a history of trauma relative to national norms (Thomson et al., 2014). However, the patients with a somatoform disorder and history of trauma were observed to have a unique cluster of psychosocial characteristics which the authors highlighted as requiring tailored assessment and treatment.

Although the information about prevalence rates of PTSD within pediatric chronic pain samples is limited, the prevalence of PTSD in adults with chronic pain has been reported to range from 10% to 50% (Asmundson et al., 2002; Burris et al., 2009; Roy-Byrne et al., 2004; Sharp, 2004). Adults who developed chronic pain from motor vehicle accidents were found to have the highest rates of co-occurring PTSD (Asmundson, et al., 2002). Patients with musculoskeletal pain have also been found to be four times more likely to develop PTSD than those without the condition (Asmundson et al., 2002). Conversely, pain is one of the most common symptoms reported by adult patients with PTSD, no matter what the traumatic event (Asmundson, et al., 2002). Further research with pediatric chronic pain populations is needed.

In terms of the clinical presentation of PTSD and chronic pain, many symptoms occur across both conditions in the pediatric population (e.g. hyperarousal, avoidance, mood changes, hypervigilance, fatigue). Children with comorbid PTSD and chronic pain are likely to report more frequent health problems, greater pain-related disability, higher pain intensity ratings, and poorer functioning (Sherman et al., 2000; Bosco et al., 2013).

Comorbidity and theoretical underpinnings

It may be tempting for some health professionals to conclude that in cases where PTSD and chronic pain co-occur, the development of the pain may be accounted for by the traumatic experience. This assumption of causality fails to recognize the theoretical complexity underpinning the comorbidity of these conditions. Theoretical models to account for the comorbidity between PTSD and chronic pain generally focus on shared vulnerability factors, such as anxiety sensitivity (Otis et al., 2006), or on mutual maintenance factors, such as attentional biases (e.g. hypervigilance), avoidance, and inability to manage cognitive demands (Sharp & Harvey, 2001). For a comprehensive discussion of the various models, see a chapter by Otis and colleagues (2006). Importantly, the fear-avoidance model holds that individuals may respond to physiological activity and arousal with fear (due to misinterpretations of reinjury or current danger), resulting in the maintenance of both chronic pain and PTSD (Bosco et al., 2013). Although avoidance/escape at the time of injury or trauma is useful and self-protective, chronic avoidance becomes maladaptive serving to maintain fear, maladaptive beliefs, maladaptive behaviors, and functional impairment.

Assessment of PTSD in the pediatric pain setting

In light of the high rate of co-occurrence of PTSD and chronic pain as well as the shared underlying vulnerabilities between the two conditions, screening patients with chronic pain for PTSD is imperative as early diagnosis is crucial to limit the impact of both disorders. Moreover, an understanding of overlapping symptoms is needed to guide treatment planning (Asmundson et al., 2002). It has been found that adults with comorbid

chronic pain and PTSD may present for the treatment of either condition (Asmundson et al., 2002). Therefore, patients presenting for a chronic pain assessment should be asked about recent or past trauma exposure. In the case of children and adolescents, it is important that such an assessment involves both child and parent report (Pöder et al., 2010). However, clinicians should be aware that parents tend to underreport children's trauma exposure and symptoms, highlighting the importance of directly asking the child about potential trauma exposure (ACPMH, 2013). A variety of screening instruments exist to help identify children who have been exposed to trauma and those at risk of developing PTSD, many of which are freely available (for a review see NCTSNET.org). Some potentially useful measures include the PTSD subscale of the Child Behavior Checklist (Achenbach & Rescorla, 2001), the Child Trauma Screening Questionnaire (Brewin et al., 2002), the Child PTSD Symptom Scale (CPSS; Foa et al., 2001) and Child Report of Posttraumatic Symptoms (CROPS; Greenwald & Rubin, 1999). If screening indicates a child has experienced trauma and is displaying symptoms consistent with a posttraumatic stress response, then a comprehensive and developmentally tailored clinical assessment of PTSD is indicated. The benefits of assessing and treating trauma reactions that fall below the diagnosis threshold are likely to outweigh the risk of not treating (Sharp, 2004).

Treatment response to PTSD co-occurring with chronic pain

Evidence-based guidelines recommend concurrent treatment of overlapping symptoms of PTSD and chronic pain using an integration of therapies for both conditions (Asmundson et al., 2002; Bosco et al., 2013). However, there is little published research investigating the treatment of PTSD and chronic pain in pediatric populations. Clinical pediatric practice at present needs to be guided, albeit cautiously, by the adult literature in this field, as well as by applying empirically supported guidelines for the management of PTSD in children and adolescents (e.g. trauma-focused cognitive behavior therapy; Silverman et al., 2008) and adapting these to the pediatric pain context.

An important focus of treatment is to reduce the interaction of symptoms from the two disorders to improve daily functioning and quality of life (Bosco et al., 2013). In particular, minimizing the shared role of fear-avoidance patterns typical to both PTSD and chronic pain is central to treatment (Bosco et al., 2013). Although an integrated treatment approach may benefit many patients, children who present with severe distress that is disproportionately related to either PTSD or chronic pain may require intensive treatment for the primary condition. It has been demonstrated that management of anxiety is associated with reductions in pain-related impairment (Benore et al., 2015). However, there is little empirical guidance as to when treatment for the two conditions should be integrated and when it should be sequential. To date there are no published integrated pediatric interventions for PTSD and chronic pain. Within the adult literature, an integrated 12-session intervention for chronic pain and PTSD with US military veterans has been described, using components of cognitive processing therapy for PTSD and cognitive behavior therapy for pain (Otis et al., 2009). However, further evaluation of this intervention is needed.

Conclusions

Chronic pain and PTSD are conditions that commonly co-occur and can have a mutual role in maintaining distress and impaired functioning. When children present for initial evaluation in a pain clinic setting they should be screened for signs of trauma exposure and symptoms of posttraumatic stress. In the presence of a trauma response it is essential that an assessment is conducted to understand the overlapping symptoms with the child's chronic pain. Failure to account for the comorbid trauma symptoms is likely to hamper treatment efforts and limit the child's return to functioning and premorbid quality of life. It is problematic that current clinical practice pertaining to PTSD and pediatric chronic pain is guided largely by an adult-focused body of research, which fails to take into account factors such as cognitive and social development and complex familial factors. Further theoretically-driven research into the presence, assessment and treatment of co-

occurring PTSD in chronic pain among pediatric populations is much needed to improve early identification and treatment efficiency of these often complex conditions.

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