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Pediatric Pain Letter

Abstracts and Commentaries on Pain in Infants, Children and Adolescents

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Editorial Note

The second annual pediatric satellite conference, "Changing the Face of Pediatric Pain", was held the day before the American Pain Society Annual Meeting in Baltimore in March 2002. This successful meeting highlighted presentations and symposia on a number of topics that have not been a major part of other pediatric pain meetings, including genetics of pain and analgesia, pathogenesis and treatment of headache, pain with chronic and life-threatening disease, pain in cognitively-impaired children and the application of physical medicine techniques in pediatric pain management. A large and enthusiastic group of attendees took part in the discussions and it was exciting to see an increasing emphasis on pain in children at the APS. This represents a substantial change in focus for the APS scientific meeting, and we hope to see an even greater participation next year (**www.ampainsoc.org**).

Commentary

Children of Parents with Chronic Pain: An At-Risk Population?

The family is frequently hypothesized to be an important social environment where children learn about pain. Indeed, there is strong empirical evidence supporting that pain conditions frequently aggregate in families (Goodman, McGrath & Forward, 1997) and a commentary in a previous issue of the Pediatric Pain Letter highlighted important issues to consider in the family transmission of pain conditions (Lilley, 1998). A "bottom-up" research approach has been frequently used to examine family characteristics of pediatric chronic pain patients. Research in this area has indicated that children with chronic pain frequently identify a greater number of salient pain models in their families than pain-free children, and that the location, frequency and intensity of the children's own pain often parallels that of their identified pain model (Osborne, Hatcher & Richtsmeier, 1989). Far less research, however, has approached the issue from a "top-down" perspective and examined the impact of parental chronic pain on children. Given our understanding of the power of social learning influences in shaping children's pain responses, it is reasonable to expect that children of adults with chronic pain might represent an at-risk population for developing pain and possibly other difficulties.

"The family is...hypothesized to be...where children learn about pain."

The studies abstracted in this issue represent a sampling of the research completed in this area. Findings generally indicate that children of parents with chronic pain appear at risk for a variety of somatic, behavioural and emotional issues. However, studies differ in the specific variables identified to be problematic for these children.

A factor that likely contributes to the mixed findings is the number of methodological flaws evident in research in the area. These methodological limitations include the following. A) The lack of appropriate control groups. In some cases, no comparison groups (e.g., an illness control) (Chun, Turner & Romano, 1993; Mikail & von Baeyer, 1990), or in other cases no control group at all (e.g., Chaturvedi & Kanakalatha, 1988; Roy, Thomas, Mogilevsky & Cook, 1994) have been included to permit conclusions regarding the specificity of findings. B) Small sample sizes. Research has focused on small groups of patients and their children. This can result in insufficient power to detect significant findings (e.g., Dura & Beck, 1988). C) Lack of standardized, well-established measures. Studies have relied on assessment approaches without any evidence of their reliability and validity (e.g., Chaturvedi & Kanakalatha, 1988; Rickard, 1988). D) Reliance on parent and/or teacher reports. Researchers have neglected inclusion of the child's perspective (e.g., Chun, Turner & Romano, 1993). E) Heterogeneity of chronic pain populations. Inclusion of diverse forms of pain in parents within the same study may introduce unnecessary variability and limit conclusions (e.g., Dura & Beck, 1988; Roy, Thomas, Mogilevsky & Cook, 1994). F) Failure to account for the degree of disability or handicap the parent has. For the most part, studies have ignored this important variable, which may be a more powerful predictor of child adjustment than the parents' type, intensity and frequency of pain.

> "...children of adults with chronic pain might represent an at-risk population for developing pain..."

Certainly, study of the children of adults with chronic pain provides a ripe context for advancing knowledge regarding the role of the family in pediatric pain. Additional descriptive research that adheres to more rigorous research methodologies is greatly needed. In addition, if children whose parents have chronic pain are found to be an at-risk population, research is needed to elucidate mechanisms that may contribute to this transmission. This research could then facilitate the development of programs aimed at preventing the development of pain and distress among children of adults with chronic pain.

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Lilley C. Are chronic and recurrent pain problems passed down in families? *Pediatric Pain Letter* 1998;2(3):31-33.

Osborne RB, Hatcher JW, Richtsmeier AJ. The role of social modeling in unexplained pediatric pain. *Journal of Pediatric Psychology* 1989;14:43-61.

Abstracts

Chaturvedi SK, Kanakalatha P. Pain in children of chronic pain patients. *The Pain Clinic* 1988;2(4):195-199.

Objective. To investigate how many children of chronic pain patients also complain of pain, to compare characteristics of parents' and children's pain and to study the response of chronic pain patients to their child's pain.
Design. Consecutive sample survey.
Setting. Mental health institute, Bangalore, India.
Participants. Patients (n=17; 6 males; mean age=43.4 years, SD=5.8 years) diagnosed with psychalgia (according to the International Classification of Diseases, Ninth Revision) who were parents. Their spouses were also included.
Main Outcome Measures. Pain patients and their spouses were interviewed and answered questions regarding their children, their children's pain, how they responded to their children's pain, the nature of their pain and neurotic traits of their children.
Results. The most common site of pain in the pain patients was the head (82.4%) and daily pain was common (70.6%). The pain patients had a total of 36 children who were less than 15 years old. Of the 36 children, 6 (2 males) complained of pain, with all 6 having head pain. None of the 6 children with pain complaints exhibited neurotic traits, while 3 of the 30 children without pain

(10%) exhibited neurotic traits. Parents reacted to their children's pain with concern and worry and often exempted their children from school and work.
Conclusions. The pain patients in this study were predominantly female. Unexpectedly, none of their children who also complained of pain were neurotic. This study is limited by the small sample size. The authors recommend further studies investigating family dynamics of chronic pain patients.

Chun DY, Turner JA, Romano JM. Children of chronic pain patients: risk factors for maladjustment. *Pain* 1993;52(3):311-317.

Objective. To investigate adjustment problems in the children of chronic pain patients and the relationship of parental factors to child maladjustment.
Design. Survey.
Setting. Pain clinic of a large university medical centre, USA.
Participants. Chronic pain patients (n=35; 18 males; mean age=37.32 years, SD=5.27 years) and their spouses (n=35; 17 males; mean age 36.06 years, SD=5.34 years) were recruited from the pain clinic. Inclusion criteria were: married or cohabiting at least 3 years, pain persisting at least 6 months, and at least one child aged between 6-16 living in the same home. For ease of data analysis, one person in each control couple was designated as the "patient". Control "patients" (n=29; 16 male; mean age=38.79 years, SD=5.23 years) and their spouses (n=29; 13 males; mean age 38.97 years, SD=4.97 years) were recruited using newspaper advertisements. Control couples were included if they were married or cohabiting for at least 3 years, had at least one child aged between 6-16 living in the same home and no pain or illness lasting more than 2 months in the previous year. Both pain and control couples chose which child to include in the study if the couples had more than one child in the desired age range.
Main Outcome Measures. Each patient and spouse independently completed the Center for Epidemiologic Studies-Depression Scale, the Dyadic Adjustment Scale, Sickness Impact Profile, the Child Behavior Checklist and a demographic questionnaire. The parents chose the teacher their child was most familiar with at school and that teacher completed the Teacher Report Form and the Child Behavior Checklist. Also, school records were consulted to determine the amount of absenteeism for each child in the study.
Results. Pain patients were more depressed ($p<0.001$) and more disabled ($p<0.001$) than control "patients". As well, pain spouses were more depressed ($p<0.001$) and more disabled ($p=0.001$) than control spouses. Multivariate analysis of variance showed a significant interaction ($p<0.001$) between group membership (i.e., pain group versus control group) and partner status (i.e., patient versus spouse). Univariate tests indicated that this interaction was due to depression ($p<0.05$) and disability ($p<0.001$). As well, the main effect on parent-rated behavior and social competence was the gender of the patient ($p<0.05$). In fact, children of male pain patients were rated significantly less socially competent than children of female pain patients ($p<0.005$). The main effects on teacher-rated behavior and social competence was gender of child ($p<0.05$) and group membership, pain versus control ($p<0.01$). Children of pain patients had more behavior problems and were less socially competent, according to their teachers. Children from both groups did not differ significantly in absenteeism. Multiple regression analysis indicted that only patient disability accounted for a significant portion (20%) of the variance in parent-rated child behavior problems. Only the gender of the patient was a significant predictor of parent-rated child social competence, accounting for 8% of the observed variance.
Conclusions. This study supports earlier findings that chronic pain patients and their spouses are more depressed than other couples. Apparently, a father's chronic pain has a greater effect of child social competence than a mother's pain. Teachers rate children of chronic pain patients as having more adjustment problems but parental ratings did not agree, possibly due to children behaving differently at home and school. Limitations of this study include a small sample size and a potential bias in having the parents with more than one child choose which of their children to include in this study.

Dura JR, Beck SJ. A comparison of family functioning when mothers have chronic pain. *Pain* 1988;35:79-89.

Objective. To assess the impact of mothers' chronic pain on family functioning.
Design. Survey.
Setting. Family homes, USA.
Participants. Families consisting of a father, mother and at least one child aged 7-13 were recruited from newspaper ads. Families that were recruited fell into one of the following three categories: families with mothers suffering from chronic pain for at least 6 months (n=7; 5 male children, 2 female children; child age range 7-13), families with mothers suffering from a chronic non-painful illness, diabetes (n=7; 2 male children, 5 female children; child age range 10-13) and control families with healthy mothers (n=7; 4 male children, 3

female children; child age range 7-12). The mothers with chronic pain suffered radiating low back pain (n=4) or radiating head and neck pain (n=3).

Main Outcome Measures. Researchers met with the families during a 2-hour session in the families' homes. Adult measures completed included; the Family Environment Scale - Form R (FES), the Beck Depression Inventory (BDI), the State-Trait Anxiety Inventory (STAI) and the Pain Disability Index (PDI). Child measures completed included; the Children's Depression Inventory (CDI), the State-Trait Anxiety Inventory for Children (STAIC) and the Child Behavior Checklist (CBCL). As well, mothers rated their child's illness behavior by rating health on a 7-point Likert scale and recalling the number of days of child illness in the previous 2 weeks. School absenteeism was determined from each child's report card. Additionally, the family was audiotaped as they completed two family interaction tasks that were considered low conflict-inducing and mild conflict-inducing, respectively. The audiotapes were assessed using Robin's and Fox's Parent-Adolescent Interaction Coding System.

Results. On the FES, control families scored higher ($p<0.05$) than pain and diabetes families on the cohesion subscale and lower ($p<0.05$) than pain families on the conflict subscale. Multivariate analysis of variance showed that mothers rated the family higher ($p<0.02$) on the relationship dimension of the FES than the children. Both fathers and mothers in pain families had higher ($p<0.05$) depression scores, as measured by the BDI. Parents from pain families had higher ($p<0.01$) scores for trait anxiety than control families, as shown by the STAI. Mothers from the pain families were more disabled ($p<0.05$) in terms of family home responsibilities, recreation, occupation, sexual behavior and total disability score than mothers with diabetes, as measured by the PDI. In fact, disability was correlated to depression (correlation coefficient r=0.71), state anxiety (r=0.70) and trait anxiety (r=0.78). Children in pain families had higher ($p<0.05$) depression scores on the CDI than children from control families. No significant effect for the three groups was found for state or trait anxiety in children. Children from pain families tended to have lower social skill scores, higher behaviour problem scores, lower parent-rated health scores and more school absenteeism than children from diabetes or control families, but these differences did not reach statistical significance. On the family interaction tasks, there was no significant difference between the three groups in either negative or positive behaviour patterns.

Conclusions. Family functioning appears more dysfunctional for pain families than for chronic disease families or healthy control families. A mother's chronic pain has adverse effects on her spouse and children. This study suggests that the actual type of chronic illness is less important in predicting adverse effects than the degree of disability associated with the illness. The results suggest an increase in disability would result in an increase in family dysfunction. A limitation is the small sample size, resulting from efforts to match families for extraneous factors such as socioeconomic status, parent age and employment status.

Goodman JE, McGrath PJ, Forward SP. Aggregation of pain complaints and pain-related disability and handicap in a community sample of families. In TS Jensen, JA Turner, Z Wiesenfeld-Hallin (Eds.), *Progress in Pain Research and Management*: Vol. 8. Proceedings of the 8th World Congress on Pain (pp. 1-10). Seattle, WA: IASP Press.

Previously abstracted in the Pediatric Pain Letter, Vol. 2, No. 3; p. 31. **www.pediatric-pain.ca/pplet/v2n3c.PDF**

Mikail SF, von Baeyer CL. Pain, somatic focus, and emotional adjustment in children of chronic headache sufferers and controls. *Social Science Medicine* 1990;31(1):51-59.

Previously abstracted in the Pediatric Pain Letter, Vol. 2, No. 3; p. 30. **www.pediatric-pain.ca/pplet/v2n3c.PDF**

Rickard K. The occurrence of maladaptive health-related behaviors and teacher-rated conduct problems in children of chronic low back pain patients. *Journal of Behavioural Medicine* 1988;11(2):107-116.

Previously abstracted in the Pediatric Pain Letter, Vol. 2, No. 3; p. 29. **www.pediatric-pain.ca/pplet/v2n3c.PDF**

Roy R, Thomas M, Mogilevsky I, Cook A. Influence of parental chronic pain on children: Preliminary observations. *Headache Quarterly* 1994;5(1):20-26.

Objective. To determine if and how parental chronic pain may affect the well being of children.

Design. Questionnaire survey.

Setting. Pain clinic, Winnipeg, Canada.

Participants. Patients (n=19; 6 male; mean age=43.4 years, SD=5.8 years) complaining of chronic pain, their spouses (n=19; 13 male; mean age=45.2 years, SD=6.3 years) and their children (n=31; age range 5-18 years).

Main Outcome Measures. Questionnaires were mailed to and completed by the pain patients and their spouses. The questionnaires included a demographic and health questionnaire, the Beck Depression Inventory (21=depression), the Pain Disability Index (34.5=low disability, 55.9=high disability), the Family Assessment Measure (20-40=family strength, 40-60=average, >60=family problems) and the Child Behavior Checklist (≥65=clinical range). Some of the questions in the demographic and health questionnaire allowed parents to report on health, socio-emotional and learning problems of their children. Children completed the Rosenberg Self-Concept Scale and the Children's Beck Depression Inventory (21=depression).

Results. All the pain patients had pain with a mean duration of 91.9 months (SD=99.3 months) and rated their pain using a mean visual analogue score of 6.2 (SD=2.0). Thirty-seven percent of spouses also complained of pain with a mean duration of 96 months (SD=89.3 months). Pain patients scored a mean of 36.9 (SD=12.7) on the Pain Disability Index, a low level of disability. Three of the children (9.8%; age range 9-12 years) were termed "vulnerable", as they scored in the clinical ranges of the psychosocial functioning measures. All three children were male and two of the three had also been identified as problematic by their parents. As well, two of the three scored in the clinical range for depression on the Children's Beck Depression Inventory. All the "vulnerable" children had their mother as the pain patient. Two of these three mothers were clinically depressed as scored by the Beck Depression Inventory and one of these three mothers scored in the clinical range on the Pain Disability Index. Two of the three spouses of these female pain patients also reported pain complaints and all three spouses rated their families as dysfunctional using the Family Assessment Measure.

Conclusions. Relatively few children of parents with chronic pain appeared to have psychosocial problems or be prone to depression. However, the small number of children termed "vulnerable" precluded meaningful statistical comparison with "nonvulnerable" children of chronic pain patients.

Recent Articles

Bernsten L, Svensson E. Pain assessment in children with juvenile chronic arthritis: a matter of scaling and rater. ***Acta Paediatrica*** **2001;90(10):1131-1136.**

Objective. To assess concordance between pain assessments made on a visual analogue scale (VAS) and a four-point verbal descriptor scale (VDS-4).

Design. Repeated measures study.

Setting. Hospital pediatric ward, Sweden.

Participants. Children with juvenile chronic arthritis (JCA) (n=26; 7 males; age range 2.2-17.8 years) and their parents.

Main Outcome Measures. Parents rated their child's pain for the previous week using the VAS (0-100; 100="worst pain ever") and the VDS-4 (1-4; 1="no pain at all", 4="severe pain which has prevented me from being with my friends/living as usual"). Children (>9 years old) rated their own pain using the VAS, the VDS-4 and a graphic rating scale (GRS) and indicated their preferred pain measurement tool. The GRS was a VAS modified with 4 verbal descriptors (no/slight/moderate/severe pain).

Results. There was high concordance between VAS and VDS-4 parental assessments; for children's own assessments, concordance was higher between VAS and GRS. There was lack of concordance between parent and child assessments of pain with the VAS (e.g., "slight pain" range for children's assessments was 7-64 and for parent's assessments was 5-29). On the VDS-4, children assessed a lower pain level than their parents. Children older than 9 years preferred the VAS and GRS.

Conclusions. The VAS is consistently used in pain assessments. Although it is easy to use and presumably offers greater sensitivity than discrete points scales, assessments may be difficult to interpret. Another point of interest is the choice of statistic used to compare pain scales; correlations and agreement in the ordering of observations produce very different findings. Further investigation should focus on reliable scales and reliable comparisons between scales.

Claar RL, Walker LS, Barnard JA. Children's knowledge, anticipatory anxiety, procedural distress and recall of esophagogastroduodenoscopy. ***Journal of Pediatric Gastroenterology & Nutrition*** **2002; 34(1): 68-72.**

Objective. To assess level of children's knowledge of esophagogastroduodenoscopy (EGD) and how it relates to anticipatory anxiety, procedural distress and post-procedural recall.

Design. Observational survey.

Setting. Medical centre, Tennessee, USA.

Participants. A consecutive sample of one hundred children (mean age=11.57 years, range 8-18 years) who underwent EGD and their parent or primary caretaker.

Fifteen of the children had previously undergone the procedure.

Intervention: Children received a topical pharyngeal anesthetic, Cetacaine® spray (14% benzocaine, 2% butyl aminobenzoate and 2% tetracaine hydrochloride) prior to the EGD procedure. Children then underwent the EGD procedure under conscious sedation using IV midazolam (dose range 0.05-0.1 mg/kg) and fentanyl (1 μg/kg).

Main Outcome Measures. Before the EGD procedure, parents completed a questionnaire detailing what they had told their child about the procedure and children completed a questionnaire to assess their knowledge of the procedure and the State-Trait Anxiety Inventory for Children. Trained observers rated child distress during the four phases of EGD (IV insertion, throat spraying, esophageal intubation and endoscopic exam) using a modified version of the Observation Scale of Behavioral Distress-Revised. One hour following the procedure, the child's pain was assessed using the Bieri Faces pain scale and the child's evaluation of EGD was assessed using the Post-Endoscopy Patient Questionnaire. Children also completed the Post-Endoscopy Patient Questionnaire by telephone the evening after the procedure.

Results. Most of the children were well equipped with knowledge of the major components of EGD such as IV (82%) and the endoscope (96%). However they were less aware of more abstract parts of the exam such as whether they would hear the physician (44%) and that they would be swallowing the scope (48%). Most parents had told the children about the major aspects of the procedure (e.g., 73% IV, 75% medication) but failed to share other information due to the assumption their child already knew. The level of parent preparation did not significantly correlate with the child's knowledge of the procedure. Children with less knowledge showed higher distress during the procedure ($p<0.05$) and a less favorable attitude toward future EGDs. Children with less knowledge did not have greater anticipatory anxiety. Children who had more distress also reported more pain ($p<0.05$), were more aversive ($p<0.001$) and anxious and upset about the prospect of future EGDs ($p<0.001$). Observers reported more distress during the endoscopic exam than other phases of EGD ($p<0.0001$). One hour after EGD, 35% remembered the esophageal intubation and 19% remembered the endoscopic exam, compared with 19.5% and 20.6% respectively the evening after the procedure. Patients with greater recall of the intubation and the examination reported the procedure to be significantly more painful ($p<0.001$).

Conclusions. Health care professionals may reduce procedural distress during EGD by assessing patient expectations and providing complete explanations about conscious sedation to patients and parents.

Fitzpatrick KP, Sherman PM, Ipp M, Saunders N, Macarthur C. Screening for celiac disease in children with recurrent abdominal pain. *Journal of Pediatric Gastroenterology & Nutrition* 2001;33(3):250-252.

Objective. To determine whether children who present symptoms of recurrent abdominal pain in primary care settings have a higher prevalence of antiendomysial antibodies typical of celiac disease.

Design. Community-based case-control study.

Setting. Pediatricians' offices, Toronto, Canada.

Participants. The sample included 81 healthy children (mean age=10.1 years, SD=3.23; 47 males) and 92 children (mean age=9.1 years, SD=2.71; 35 males) with recurrent abdominal pain as the primary complaint (based on Apley's criteria). Excluded were children with signs of organic disease (e.g., acute or unremitting abdominal pain, documented weight loss) and children under 5 years of age.

Main Outcome Measures. The presence of serum antiendomysial antibodies, a marker of celiac disease, was determined for all children.

Results. Only 2 out of all 173 (1.2%) serum samples were positive for antiendomysial antibody. One positive sample was from a child with recurrent abdominal pain and the other was from a healthy control. There was no association found between positive tests for celiac disease and recurrent abdominal pain.

Conclusions. Because there was no correlation found between recurrent abdominal pain and antiendomysial antibody, the study suggests it is unlikely that celiac disease is an organic cause of recurrent abdominal pain without presence of diarrhea, irritability, impaired growth and undernutrition due to maldigestion and malabsorption. The authors recommend against screening for celiac disease in primary care settings for children with classic recurrent abdominal pain. Limitations of the study include small sample size and failure to confirm diagnostic sensitivity of antiendomysial antibody screening by small bowel biopsy.

Grunau RE, Oberlander TF, Whitfield MF, Fitzgerald C, Lee SK. Demographic and therapeutic determinants of pain reactivity in very low birth weight neonates at 32 weeks postconceptual age. *Pediatrics* 2001;107(1):105-112.

Objective. To examine relationships of infant factors and

previous medication exposure to pain behaviours associated with routine heel lance.
Design. Prospective cohort study.
Setting. Neonatal intensive care unit (NICU), children's hospital, British Columbia, Canada.
Participants. Infants (n=162; birth weight ≤1500g) admitted to the NICU and undergoing routine heel lance for blood collection at 32 weeks postconceptual age. No infants had major congenital anomalies.
Main Outcome Measures. The heel lance procedure can be broken down into 6 components; baseline, contact, swab, lance, squeeze and recovery. Infant sleep/waking state was assessed during the squeeze phase of the heel lance. Facial activity determined using the Neonatal Facial Coding System (NFCS) and electrocardiograph activity (ECG) was assessed for each component of the heel lance procedure.
Results. Facial activity changed significantly across events, increasing at swab, lance and squeeze (all $p<0.0001$). Infant sleep/waking state also changed significantly, increasing at lance ($p=0.0001$) and decreasing at recovery ($p=0.0001$). Mean heart rate increased significantly from baseline to squeeze ($p=0.0001$) and decreased to recovery ($p=0.0001$), however a skewed distribution prompted further analysis of high and low frequency heart rate variability. Analysis showed these variables decreasing from baseline to squeeze and increasing during recovery, suggesting increased sympathetic control and decreased parasympathetic control of heart rate. Greater numbers of invasive procedures and gestational age were related to dampened pain responses, as was exogenous steroid exposure. A normalized pain response was associated with previous exposure to morphine.
Conclusions. For infants of low gestational age, pain exposure may alter the autonomic substrate. As a result, the infant seems to be in a constant stress state. Although the neurodevelopmental effects were not assessed, early morphine exposure appears to ameliorate the effect.

Hunfield JAM, Perquin CW, Duivenvoorden HJ, Hazebroek-Kampschreur AAJM, Passchier J, van Suijlekom-Smit LWA, van der Wouden JC. Chronic pain and its impact on quality of life in adolescents and their families. ***Journal of Pediatric Psychology*** **2001;26(3):145-153.**

Objective. To determine the intensity and frequency of chronic pain in adolescents and to evaluate the impact of chronic pain on the quality of life of adolescents and their families.
Design. Survey.
Setting. Participants' homes, The Netherlands.
Participants. A convenience sample of adolescents with chronic pain (n=128; 33 males; mean age=14.7 years, range 12-18 years) who had previously participated in a prevalence study of chronic pain in a representative sample of 5,423 Dutch children and adolescents. Adolescents with chronic pain resulting from chronic disease such as rheumatic arthritis and malignancies were excluded from the study.
Main Outcome Measures. Two self-report measures were used: the Pain List to evaluate location, frequency, estimated intensity and history of pain; and a 3-week pain diary to further evaluate pain frequency and intensity. The Quality of Life Pain-Youth questionnaire was used to assess adolescent quality of life. The Impact on Family Scale (completed by mothers) was used to evaluate the impact of adolescent chronic pain on the family.
Results. The duration of the adolescents' chronic pain averaged 3.3 years (SD=3.1 years). The most commonly reported pains were limb pain (34%), headache (26%), abdominal pain (16%) and back pain (15%). Pain frequency increased during the day, with the most frequent pain reported near dinnertime for both genders ($p<0.001$). The highest reports of pain intensity occurred near bedtime for girls ($p=0.001$). More frequent and intense pain was reported by girls. Increased frequency and intensity of pain was associated with lower self-reported quality of life of both male and female adolescents. Family life was negatively impacted by chronic pain. Increased levels of adolescent pain was associated with maternal reports of restrictions in social life and difficulties dealing with their adolescent's pain.
Conclusions. Gender differences in self-reported pain were observed, with females reporting more frequent and intense pain. Pain reports increased in frequency through the day, with more intense pain reported at bedtime. Chronic pain had a negative impact on the reported quality of life of adolescents and their families.

Lal MK, McClelland J, Phillips J, Tubb NA, Beattie RM. Comparison of EMLA® cream versus placebo in children receiving distraction therapy for venepuncture. ***Acta Paediatrica*** **2001;90(2):154-159.**

Objective. To compare the efficacy of distraction therapy as a coping strategy before and during venepuncture and to assess the need for EMLA® in these children.
Design. Prospective, randomized, double-blind, placebo-controlled clinical trial.
Setting. Children's Admission Unit, district hospital, England.
Participants. Twenty-seven children (age range 4-8 years;

14 males) undergoing diagnostic blood sampling were randomly assigned to receive either 2.5 g of EMLA® 5% cream or 2.5 g of placebo cream (1 ml of Aqueous Cream BP) over a prominent vein on the dorsum of the hand. All children received distraction therapy prior to and during the procedure by a play specialist.
Main Outcome Measures. Heart rate and oxygen saturation were obtained both 5 minutes before and after venepuncture. Pain was assessed by the nurse and parent using the Princess Margaret Hospital Pain Assessment Tool. The children rated their pain using the Wong-Baker face pain rating scale. A total pain score was derived from the scores for facial expression, sounds, self-assessment, nurse's and parent's assessment.
Results. There was no significant difference in pre- and post-procedure heart rate and oxygen saturation between the EMLA® and placebo groups. There was no significant difference in the total pain score in between the two groups (median total pain score = 1 in both groups).
Conclusions. This small study indicates that distraction therapy is an effective coping strategy during painful procedures such as venepuncture in children and there may be very little additional benefit of EMLA® cream in this situation. However, caution is needed in interpreting the results since the sample was very small and pain scores in both the EMLA® and placebo groups were low.

Simons J, Franck L, Roberson E. Parent involvement in children's pain care: views of parents and nurses. *Journal of Advanced Nursing* 2001;36(4):591-599.

Objective. To investigate the views of parents and nurses concerning parental involvement and its effects in postoperative pain management.
Design. Structured interview study.
Setting. Children's hospital, England.
Participants. Mothers (n=20) of children who recently had moderate to major surgery and nurses (n=20) who had supplied the most postoperative care for the children were recruited. All children had a morphine pump postoperatively.
Main Outcome Measures. Mothers and nurses underwent videotaped interviews following the removal of the child's morphine pump (≥48 hours postoperative). A phenomenological interview style was used, focusing on feelings, attitudes and meanings. All participants were asked the same four open-ended questions concerning; the degree of parental involvement in the child's pain care, the facilitation of nurses for parental involvement, the degree of satisfaction with pain management and how parental involvement in the child's pain management could be improved. Interview data was analyzed using recursive comparative analysis.
Results. Nurses and mothers agreed that most parents were involved in their child's pain care but the involvement was essentially passive (i.e., mere presence of parent). Only 3 of 20 parents but all nurses were satisfied with the child's pain care. Only 2 of 20 nurses realized that their perceptions of the adequacy of pain care differed from those of the parents. Nearly half of the parents reported they received inadequate information on pain care but most were reluctant to ask questions of nurses.
Conclusions. Parents are only passively involved in their child's pain care. Different perceptions of mothers and nurses could be attributed to a lack of communication. There is need for nurses to discuss parental involvement in pain care with parents and negotiate roles in relation to pain management. The small sample size limits the generalizability of the findings.

Stafstrom CE, Rostasy K, Minster A. The usefulness of children's drawings in the diagnosis of headache. *Pediatrics* 2002;109(3):460-472.

Objective. To determine if the differential diagnosis of headache in children is aided by the examination of children's headache drawings.
Design. Comparative, blinded study.
Setting. Pediatric neurology clinic, USA.
Participants. Consecutive sample of 226 children (105 males; mean age 11.4 years, range 4-19 years) referred by primary care physicians or pediatric neurologists for the evaluation of headache.
Main Outcome Measures. Each child was first asked to create a drawing based on the following instructions; "Please draw a picture of yourself having a headache. Where is your pain? What does your pain feel like? Are there any other changes or symptoms that come before or during your headache that you can show me in a picture?". Subsequently, each child received a clinical diagnosis (i.e., migraine or nonmigraine) based on history and a physical examination by a pediatric neurologist. This clinical diagnosis was considered the criterion standard. Each child's drawing was then analyzed independently by 2 pediatric neurologists blinded to the child's clinical history. Clinical judgement was used to determine if the headache drawings contained migraine or nonmigraine features. The clinical diagnosis was then compared with diagnosis based on the drawing.
Results. Interrater agreement between pediatric neurologists analyzing the drawings was excellent (kappa value=0.92). Headache drawings achieved a positive

predictive value of 87.1% for migraine. When compared with clinical diagnosis, headache drawings had a sensitivity and specificity of 93.1% and 82.7% respectively. Predictive values for depicted migraine-associated features were calculated. Headache drawing including focal neurologic signs, periorbital pain, recumbency, visual symptoms (photophobia, scotomata), nausea/vomiting had a positive predictive value of >90% for migraine. Drawings depicting severe or pounding pain had a positive predictive value of > 80%. Depictions of band-like pain, sadness or crying did not differentiate migraine from nonmigraine headaches. Contrary to expectations, discordances (i.e., false positives and false negatives) were lowest in the younger children (<8 years).

Conclusions. The use of children's headache drawings as an aid in the differential diagnosis of headache type is recommended for children of all ages. These drawings are simple, inexpensive and have very high sensitivity, specificity and predictive value.

Stallard P, Williams L, Lenton S, Velleman R. Pain in cognitively impaired, non-communicating children. *Archives of Disease in Childhood* 2001;85(6):460-462.

Objective. To document the frequency and characteristics of everyday pain in children with cognitive impairment.

Design. Prospective survey.

Setting. Service for children with nonmalignant, life-threatening illness, England.

Participants. Children (n=34; 18 males; mean age=9.4 years) suffering from a non-malignant, life-threatening illness and their caregivers. Children were included if they had no expressive language and were ≥2 years of age.

Main Outcome Measures. Caregivers completed a daily diary for 2 weeks, documenting the presence, severity (mild, moderate or severe) and duration of pain (<10 minutes, 10-30 minutes or >30 minutes) observed during 5 specified time intervals during the day. No child was receiving active treatment for relief or management of pain.

Results. Twenty-five children (73.5%) had pain at least once during the 2 weeks of observation. Of these 25 children, 21 (84%) had pain on 5 or more separate days and 8 (32%) had pain on 12 or more separate days. On average, pain occurred on 6.05 consecutive days (range 2-14 days). Of the 415 painful episodes observed, 49.9% were rated as mild, 38.6% as moderate and 11.5% as severe. As well, 44.1% lasted <10 minutes, 38.1% lasted 10-30 minutes and 17.8% lasted >30 minutes. Moderate to severe pain and longer lasting pain tended to occur between 12:00 am to 8:00 am, often disrupting sleep.

Conclusions. While this study is limited by a small sample size, it appears children with cognitive impairment experience pain frequently but do not receive treatment for their pain. The authors recommend studies to assess the clinical utility and sensitivity of pain measurement tools designed for cognitively impaired children.

Thastum M, Zachariae R, Herlin T. Pain experience and pain coping strategies in children with juvenile idiopathic arthritis. *Journal of Rheumatology* 2001;28(5):1091-1098.

Objective. To examine whether pain coping strategies of children are related to the pain coping strategies of their parents.

Design. Between-group case control study.

Setting. Pediatric rheumatology clinic at a university hospital and an elementary school, Denmark.

Participants. Sixteen children (6 males; mean age=12.4 years, SD=2.6 years) diagnosed with juvenile idiopathic arthritis (JIA) and one of their parents were recruited from the pediatric rheumatology clinic. Fourteen generally healthy children (6 males; mean age=14.0 years, SD=1.6 years) and one of their parents were recruited from a nearby elementary school. Of the 16 children with JIA, 7 were categorized as a "high pain" group and 9 were categorized as a "low pain" group, based on daily reports of pain, erythrocyte sedimentation rate (ESR) and the number of affected joints.

Main Outcome Measures. All participants underwent an experimental pain induction procedure using a cold pressor apparatus using water at 6 °C for children and 1 °C for parents. Pain intensity was assessed using a computerized visual analogue scale (VAS). Pain threshold was measured as the time at which a participant first moved the electronic button used to rate pain. Pain tolerance was recorded as the time in seconds that individuals were able to keep their arm submerged in the cold water (to a maximum of 5 minutes). Pain discomfort was assessed using a rating of discomfort (0-10, 10=maximum) 2 minutes after a participant's arm was taken out of the cold water. Ratings of the JIA patients' perceived clinical pain by themselves and their parents were taken using the Varni/Thompson Pediatric Pain Questionnaire (PPQ). Clinical pain intensity was rated using VAS. Coping strategies that the children with JIA used to deal with clinical pain were recorded using the Pain Coping Questionnaire (PCQ). Coping strategies employed during experimental pain induction were obtained using a revised version of the PCQ.

Results. Healthy children were found to be able to tolerate pain longer than the children with JIA ($p<0.01$). Parents of JIA patients showed less catastrophizing than parents of healthy children (p<0.05). Healthy children reported fewer behavioural distraction strategies than JIA patients (p<0.02) and JIA patients in the "high pain" group reported fewer behavioural distraction strategies than those in the "low pain" group (p<0.01). Statistically significant correlations were found between JIA parents' use of ignoring pain sensations and JIA patients' use of positive self-statements (correlation coefficient=0.53) and cognitive distraction (correlation coefficient=0.72) and between parents' use of catastrophizing and JIA patients' use of externalizing (correlation coefficient=0.82) and internalizing/catastrophizing (correlation coefficient=0.66). The three clinical pain measures taken for JIA patients were inversely correlated with the positive self-statement (correlation coefficient range -0.53 to -0.73) and behavioural distraction (correlation coefficient range -0.58 to -0.69) measures of the PCQ. Distraction as a coping strategy for experimental pain was correlated with tolerance to experimental pain (correlation coefficient=0.57). A pain coping strategy of catastrophizing was inversely correlated to tolerance to experimental pain in healthy children (correlation coefficient = -0.58).

Conclusions. Children with JIA may have lower pain tolerance than generally healthy children when responding to experimentally induced pain. Pain coping strategies of JIA patients in some domains may be associated with the pain coping strategies in other domains of their parents. The use of pain coping strategies may have also been associated with participants' experiences of both experimental and clinical pain.

Review Articles

The *Pediatric Pain Letter* briefly notes the following recent review articles:

Edelstein BL. Disparities in oral health and access to care: findings of national surveys. *Ambulatory Pediatrics* 2002;2(2):141-147.

Edelstein's paper is a tour de force of the evidence for the unfortunate state of oral health and dental pain in the USA based on social class, even though dental insurance is provided by the state. He discusses the complex causes and outlines credible directions for solutions.

Field T. Massage therapy. *Medical Clinics of North America* 2002;86(1):163-171.

Tiffany Field prevents a very credible review of the scientific literature on the effects of massage therapy (some on pain). Field has contributed much of this literature and has pioneered good research on this important topic.

Franck L, Lefrak L. For crying out loud: the ethical treatment of infants' pain. *Journal of Clinical Ethics* 2001;12(3):275-281.

Rouzan IA. An analysis of research and clinical practice in neonatal pain management. *Journal of the American Academy of Nurse Practioners* 2001;13(2):57-60.

Frank and Lefrak have added a short and useful review of ethics as applied to neonatal pain to the very scant literature in this area. Rouzan provides a similar short and useful review.

Hadjistavropoulos T, Craig KD. A theoretical framework for understanding self-report and observational measures of pain: a communications model. *Behaviour Research & Therapy* 2002;40:551-570.

Hadjistavropoulos and Craig present a provocative and important communication model of pain that is applicable to both the pediatric and adult situation.

Husby S, Høst A. Recurrent abdominal pain, food allergy and endoscopy. *Acta Paediatrica* 2001;90(1):3-4.

Theissen PN. Recurrent abdominal pain. *Pediatrics in Review* 2002;23(2):39-45.

Zeiter DK, Hyams JS. Recurrent abdominal pain in children. *Pediatric Clinics of North America* 2002;49(1):53-71.

Three recent papers on recurrent abdominal pain recently crossed our desk. Thiessen briefly reviews the literature and gives reasonable clinical suggestions. Zeiter and Hyams provide a detailed review of the recent literature and give an excellent up-to-date background to this common problem. Husby and Høst review the literature on food allergy and recurrent abdominal pain. Although the literature is mostly negative, they correctly point out that there are theoretical reasons to suggest that food allergy may be important and that careful trials have not been done.

Announcements

Meetings

June 21-25, 2002: *Canadian Anesthesiologists' Society 58th Annual Meeting, Victoria, British Columbia, Canada.* For more information, contact the CAS Meeting Co-ordinator, 1 Eglinton Avenue East, Suite 208, Toronto, Ontario, M4P 3A1, tel: 416-480-0602, fax: 416-480-0320, website: **www.cas.ca/meeting**.

August 17-22, 2002: *The 10th Triennial World Congress on Pain, San Diego Convention Center, San Diego, California, USA.* More information may be found at the following website: **www.iasp-pain.org**.

International Forum on Pediatric Pain

The Context of Pediatric Pain: Biology, Family, Society, Culture

September 19 - 22, 2002

White Point Beach, Nova Scotia, Canada

Speakers include: Jeff Mogil, Canada: Genetics of pain and analgesia; Sunny Anand, USA: Early pain experience (the animal data); Ruth Grunau, Canada: Early pain experience (the human data); Carl von Baeyer, Canada: Cognitive and social development; Gustaf Ljungman, Sweden: Effects of chronic illness; Christine Chambers, Canada: Family issues; Ken Craig, Canada: Social influences, culture, ethnicity; Ada Jacox, Detroit, USA: Health centre policies and accreditation; David Joranson, Madison, USA: Governmental policies.

PLEASE CONTACT: Conventional Wisdom Event Planning
6496 Liverpool Street, Halifax, NS, B3L 1Y4, CANADA
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http://www.pediatric-pain.ca/ifpp

6th International Symposium on Paediatric Pain

ISPP 2003

6th INTERNATIONAL SYMPOSIUM ON PAEDIATRIC PAIN

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Sponsored by the Special Interest Group on Pain in Childhood, International Association for the Study of Pain

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The Symposium will reflect an evidence based approach to defining shared knowledge and common goals, as well as educating and challenging researchers on what clinicians need to know in caring for children in pain.

CALL FOR WORKSHOPS DEADLINE: 1 May 2002
CALL FOR POSTERS DEADLINE: 15 December 2002

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Positions

The Department of Anesthesiology, Medical College of Wisconsin, has an immediate opening for a **Pediatric Psychologist** to work in the Jane B. Pettit Pain and Palliative Care Center at the Children's Hospital of Wisconsin. Primary responsibilities include: participation in a multidisciplinary collaborative family health care team to evaluate and treat infants, children and adolescents with pain problems; participation and leadership in pediatric pain-related research; collaboration with medical, nursing and rehabilitation support staff; instruction of medical and psychology students and residents in pediatric pain management. This is a faculty position at the Assistant/Associate rank with opportunities for participation and leadership in research and education. Requirements include a Ph.D. in Clinical Psychology with an APA approved internship and license or eligibility in the State of Wisconsin. Specific training or participation in pediatric pain management and research is preferred. Applicants should respond with a CV and cover by letter, fax or email to: Steven J. Weisman, MD, Jane B. Pettit Chair in Pain Management, Jane B. Pettit Pain and Palliative Care Center, Children's Hospital of Wisconsin, PO Box 1997 MS 792, 9000 West Wisconsin Avenue, Milwaukee, WI 53201-1997, 414-266-2775 (Voice), 414-266-1761 (Fax), email: **sweisman@mcw.edu**.

The Pediatric Chronic Pain Management Program, Department of Anesthesia at the Hospital for Sick Children, Toronto is advertising for a **Fellow** commencing July 2002. Applications are invited from Board eligible (CA-3 completed or fellowship qualification outside of North America) candidates. It would be expected that applicants would have some prior experience of management of pain in children. Individuals trained in anesthesia or other pain allied specialties will be considered. For further information, please contact Stephen Brown, Director Chronic Pain or Hana Zita **hana.zita@sickkids.on.ca** (tel: 416-813-7240, fax: 416-813-7543).

Short announcements on pediatric pain events will be published free of charge.

Assistants for this issue: Lynn Breau, Sheldon Choo, Alyson Currie, Bruce Dick, Frank Elgar, Jill Hatchette, Sandra Reyno and Trudi Walsh.

Subscriptions

One-year subscription is $25 CDN in Canada, $35 CDN or $25 US in other countries. Payment can be made by cheque (payable to Dalhousie University - *Pediatric Pain Letter*), Visa, or MasterCard. Subscribe by sending payment and mailing address to the Managing Editor.

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Note: Over the next few issues we will be modifying the format in an effort to improve the usefulness of the *Pediatric Pain Letter*. Your comments are appreciated.

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