

Journal Scan

U C Ojha

Specialist & Head – Department of Respiratory Medicine, E.S.I Hospital, New Delhi

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Indian J Sleep Med 2010; 5.3, 98-103

Arch. Dis. Child., Feb 2009; 94: 83-91.

Growth and growth biomarker changes after adenotonsillectomy: systematic review and meta-analysis

K A Bonuck¹, K Freeman² and J Henderson³

¹ *Department of Family and Social Medicine, Albert Einstein College of Medicine, Bronx, New York, USA*

² *Department of Epidemiology and Population Health, Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, New York, USA*

³ *Department of Community-based Medicine, University of Bristol, Bristol, UK*

Correspondence: Karen Bonuck, Department of Family and Social Medicine, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Mazer, Bronx, NY 10461, USA; bonuck@montefiore.org

OBJECTIVE: To determine the effect of adenoidectomy and/or tonsillectomy (“adenotonsillectomy”) upon growth and growth biomarkers, in the context of sleep disordered breathing (SDB). SDB in children, primarily due to adenotonsillar hypertrophy, increases the risk of growth failure.

DESIGN: Systematic review and meta-analysis. PubMed, ERIC and Cochrane Reviews databases from January 1980 to November 2007 were searched for studies reporting: pre/post-adenotonsillectomy height and weight changes as percentage increased or decreased, raw data, z scores or centiles, or: IGF-1 and/or IGFBP-3 serum-level changes as z scores or raw data. For anthropometrics, the meta-analysis included studies presenting z scores or centiles.

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Address for correspondence

Dr U C Ojha

Specialist & Head, Dept of Respiratory Medicine
E.S.I. Hospital, Basaidarapur, New Delhi
Email: ucojha@rediffmail.com

SETTING: Observational studies.

PATIENTS: Otherwise healthy children, not selected for obesity.

MAIN OUTCOME MEASURES: Pre/post-surgery changes in standardised height and weight, and IGF-1 and IGFBP-3.

RESULTS: Of 211 citations identified, 20 met systematic review criteria. SDB was an enrolment criterion in 13 of the studies, and one of several enrolment criteria in three. Meta-analysis findings for pre/post-surgery changes were: standardised height: 10 studies, 363 total children, pooled standardised mean differences (SMD)=0.34 (95% CI 0.20 to 0.47); standardised weight: 11 studies, 390 total children, pooled SMD=0.57 (95% CI 0.44 to 0.70); IGF-1: 7 studies, 177 total children, pooled SMD= 0.53 (95% CI 0.33 to 0.73); IGFBP-3: 7 studies, 177 total children, pooled SMD = 0.59 (95% CI 0.34 to 0.83).

CONCLUSIONS: Standardised height and weight, and IGF-1 and IGFBP-3 increased significantly after adenotonsillectomy. Findings suggest that primary care providers and specialists consider SDB secondary to adenotonsillar hypertrophy when screening, treating and referring children with growth failure.

Arch Otolaryngol Head Neck Surg. 2009; 135(12):1239-1245.

Location of Bacterial Biofilm in the Mucus Overlying the Adenoid by Light Microscopy

Birgit Winther, MD, Brian C. Gross, MD, J. Owen Hendley, MD and Stephen V. Early, MD

OBJECTIVE : To determine the location of bacteria and biofilm in adenoid tissue and in mucus overlying the adenoid.

DESIGN: Adenoids removed in 1 piece were oriented to the cephalic and caudal ends. Mucus was fixed by the gradual addition of Carnoy fluid. Consecutive histologic sections were stained with periodic acid–Schiff for visualization of the exopolysaccharide matrix, Giemsa for visualization of bacteria and cells, and fluorescent in situ hybridization with a universal probe for visualization of bacteria.

SETTING: Department of Otolaryngology–Head and Neck Surgery, University of Virginia.

PARTICIPANTS: We obtained adenoids from children 10 years or younger who had chronic adenotonsillitis or obstructive sleep apnea. Twenty-seven adenoids were used to develop the fixation method. We examined histologic sections from 9 of 10 adenoids fixed using the final fixation protocol. One adenoid that was missing the surface epithelium was excluded from further evaluation.

MAIN OUTCOME MEASURE: Identification of bacteria by light microscopy.

RESULTS: Bacteria in large numbers were present in the mucus overlying the surface of all 9 adenoids; bacteria were not found in the parenchyma of the adenoids below the epithelial surface. Bacterial biofilms were present on 8 of the 9 adenoids. Sessile (attached) biofilm was present on the caudal end of only 1 adenoid. Multiple planktonic (unattached) biofilms were present on 7 adenoids, always in areas not subject to mucus flow. Biofilms were most common on the caudal portions of adenoids.

CONCLUSIONS: Bacteria of the adenoid reside in secretions on the surface and in crypts. Biofilms, predominantly planktonic, were present on 8 of 9 adenoids excised because of hypertrophy. Whether biofilms have a role in the causation of adenoid hypertrophy is not known.

Author Affiliations: Departments of Otolaryngology–Head and Neck Surgery (Drs Winther, Gross, and Early) and Pediatrics (Dr Hendley), University of Virginia School of Medicine, Charlottesville.

Clinical Pediatrics, October 2009; 48: 812 - 818.

Obesity in Children Is Associated With Increased Health Care Use

Elie Hering, MD

Pediatrics Department, Clalit General Health Care,

*Child Care Center, Tirat Hacarmel, Israel,
E-mail: ELIEZERHE@clalit.org.il*

Irena Pritsker, MD

*Pediatrics Department, Clalit General Health Care,
Child Care Center, Tirat Hacarmel, Israel*

Ludmila Gonchar, MD

*Pediatrics Department, Clalit General Health Care,
Child Care Center, Tirat Hacarmel, Israel*

Giora Pillar, MD, PhD

*Pediatrics Department, Meyer Children's Hospital,
Rambam Medical Center and Technion Faculty of
Medicine, Haifa, Israel*

BACKGROUND: The prevalence of obesity in children has steadily risen during recent years in developed countries. There is increasing data associating this rise in obesity with a rise in morbidity. In adults, data show clear association between obesity and health care use. This study examined the effects of obesity on health care use in children of several age groups.

METHODS: The population consisted of children from Tirat HaCarmel, Israel, who are patients at the town's Clalit Health Care, Child Care Center (CCC). All obese children (body mass index [BMI] > 95%) participated and were matched by age and gender with nonobese children (BMI < 85%) who served as a control group. Children were further divided into 3 age groups: ages 4 to 7 years, 8 to 11 years, and 12 to 18 years. Health care use was measured by 4 criteria over a 2-year time period: clinic visits, emergency department visits, hospitalizations, and medication use.

RESULTS: Of more than 4000 children treated in the CCC, 363 obese children were matched to 382 control children. Obese children had significantly more clinic visits (4942 vs 4058, $P < .001$), had more hospitalizations (67 vs 34, $P < .001$), were hospitalized for longer periods (207 vs 79 days, $P < .001$), and used significantly more medications (5945 vs 4638, $P < .001$) than did the control group.

CONCLUSION: This study provides objective clinical evidence that obesity in children is associated with increased health care use. This information has clear implications for both the public health and health insurance sectors and supports the need to invest in efforts to reduce childhood obesity.

Cephalalgia, January 2009; 29: 3–16.

Measuring the Impact of Headache in Children: A Critical Review of the Literature

D Kernick¹ and J Campbell²

¹ St Thomas Health Centre, St Luke's Campus, Exeter, UK

² Peninsula Medical School, St Luke's Campus, Exeter, UK

Correspondence: Dr David Kernick, St Thomas Health Centre, Cowick Street, Exeter EX4 1HJ, UK. Fax + 013-9267-6677, e-mail : su1838@eclipse.co.uk

Headache is the most frequent neurological symptom and commonest manifestation of pain in childhood. Measuring the impact of headache in terms of health status, functioning and quality of life can inform the prioritization of competing resource claims, screen for unmet need, improve communication between patient and physician and monitor response to treatment. We undertook a critical review of the literature measuring the impact of headache in children and identified 33 papers that contained relevant information. Findings reflected a wide range of settings, age groups, methodologies and outcome measures. Considerable methodological limitations affected all studies, including inadequate description of study design, methodology and data analysis. Nevertheless, although we found the existing literature to be of inconsistent quality, the impact of headache in children and adolescents is substantial. Rigorous studies are required to quantify this burden using measures that are valid and reliable and whose development has been informed by both theoretical and practical perspectives.

Keywords: Headache • children • quality of life

J Clin Pediatr Dent. 2009 Winter; 34(2):103-6.

Obesity in children: a challenge that pediatric dentistry should not ignore—review of the literature.

Bimstein E, Katz J.

Department of Pediatric Dentistry, University of Florida College of Dentistry,

Gainesville Florida 32610-0426, USA.

E-mail: bimstein@dental.ufl.edu

Indian Journal of Sleep Medicine (IJSM), Vol. 5, No. 3, 2010

The link between childhood oral diseases and obesity is demonstrated by their increasing prevalence, potential cause and effect relationship, the significant deleterious effect on the child's present and future oral and systemic health, and the influence of obesity on conscious sedation. The purpose of this manuscript is to review the literature on the relationships between childhood oral diseases and obesity, and between obesity, breathing and conscious sedation. While some reports suggest a connection between caries and obesity others do not, and it is unclear if they correlate or they just coexist since they have common etiologic and/or facilitating factors. Deleterious effects of dental caries and obesity on the systemic condition are clear, may potentiate each other, and facilitate the development and progress of chronic or acute systemic conditions. Obesity may interfere with the possibility to sedate patients because of potential breathing problems, or modify the effect of the sedative agents. Health providers should be aware of the increasing challenge posed by the correlations between dental caries, obesity, oral and systemic diseases. Furthermore, pediatric dentistry should team with other health professions in order to cooperate in the prevention and treatment of these diseases.

PMID: 20297698 [PubMed – indexed for MEDLINE]

N Z Med J. 2009 Dec 11;122(1307):69-75.

What is the mechanism of sudden infant deaths associated with co-sleeping?

McIntosh CG, Tonkin SL, Gunn AJ.

Dept of Physiology, University of Auckland, Private Bag 92019, Auckland 1023, New Zealand.

The risk of Sudden Infant Death Syndrome (SIDS) has fallen dramatically in the “Back to Sleep” era; however, half the cases now occur when the infant has been sleeping in bed with another person. Despite the association of SIDS with co-sleeping, parents are receiving mixed messages. It is often presumed that co-sleeping deaths are due to ‘overlying’, when the adult rolls on top of the baby, stopping baby from breathing. We examine research that shows that it is not necessary to cover the face, or squash the body of a baby to restrict or prevent breathing and cause oxygen deprivation. At birth, the tempo-

mandibular joint is not yet fully formed, and thus the jaw can be easily displaced upwards and backwards pushing the tongue into the upper airway to form a partial or complete block of the airway. Indeed, this can happen with firm flexion of the infant's head so that the chin pushes against its own chest. Further research is needed, but on present evidence, all parents should be advised to sleep their baby in a cot or similar next to their parent's bed, until baby is at least 6 months of age.

PMID: 20148046 [PubMed – indexed for MEDLINE]

J Sleep Res.2010 Jun;19(2):366-73. Epub 2009 Dec 28.

The sleep of children with attention deficit hyperactivity disorder on and off methylphenidate: a matched case-control study.

Galland BC, Tripp EG, Taylor BJ.

*Department of Women's and Children's Health,
University of Otago, Dunedin, New Zealand.
barbara.galland@otago.ac.nz*

In the present study, we assessed the effects of regular use of methylphenidate medication in children diagnosed with attention deficit hyperactivity disorder (ADHD) on sleep timing, duration and sleep architecture. Twenty-seven children aged 6-12 years meeting diagnostic criteria for Diagnostic and Statistical Manual version IV ADHD and 27 control children matched for age (+/-3 months) and gender.

Two nights of standard polysomnographic (PSG) recordings were conducted. ADHD children were allocated randomly to an on- or 48 h off-methylphenidate protocol for first or second recordings. Control children's recordings were matched for night, but no medication was used. Mixed modelling was employed in the analyses so that the full data set was used to determine the degree of medication effects. Methylphenidate in ADHD children prolonged sleep onset by an average of 29 min [confidence interval (CI) 11.6, 46.7], reduced sleep efficiency by 6.5% (CI 2.6, 10.3) and shortened sleep by 1.2 h (CI 0.65, 1.9). Arousal indices were preserved. Relative amounts of stages 1, 2 and slow wave sleep were unchanged by medication. Rapid eye movement sleep was reduced (-2.4%) on the medication night, an effect

that became non-significant when control data were incorporated in the analyses. PSG data from ADHD children off-medication were similar to control data. Our findings suggest that methylphenidate reduces sleep quantity but does not alter sleep architecture in children diagnosed with ADHD. An adequate amount of sleep is integral to good daytime functioning, thus the sleep side effects of methylphenidate may affect adversely the daytime symptoms the drug is targeted to control.

PMID: 20050995 [PubMed – indexed for MEDLINE]

J Child Adolesc Psychopharmacol. 2009 Dec; 19(6): 749-56.

Cognitive function with long-term risperidone in children and adolescents with disruptive behavior disorder.

Pandina GJ, Zhu Y, Cornblatt B.

*Johnson & Johnson Pharmaceutical Research & Development, Titusville, New Jersey 08560, USA.
gpandina@prdus.jnj.com*

OBJECTIVE: The aim of this study was to evaluate cognitive effects from long-term risperidone treatment for disruptive behavior disorders (DBDs) in children and adolescents.

METHODS: Patients 5-17 years old with DBDs and an intelligence quotient (IQ) > or =54 were randomized to flexibly dosed risperidone or placebo in a 6-month recurrence prevention trial. Cognitive function was assessed with a modified California Verbal Learning Test for Children (MVLTC) and Continuous Performance Test (CPT), which assessed vigilance through computer testing with both an easy and a hard test. Somnolence was also evaluated throughout treatment. Clinically meaningful treatment effects were assessed as changes of > or =0.5 or > or =1.0 standard deviation (SD) from baseline.

RESULTS: A total of 284 subjects participating in 6-month maintenance treatment had both baseline and end point cognition assessments and were included in this analysis. Significant improvements from baseline occurred in risperidone-treated subjects for CPT hard hit rates and discrimination ability (Pr) ($p < 0.05$ for

both), and in placebo subjects for CPT easy false alarms rates ($p < 0.001$) and hard Pr ($p < 0.05$). Both the easy and hard CPTs correct mean response time worsened with placebo. The MVLTC short-delay free recall improved significantly for both risperidone and placebo. After adjusting for country, somnolence, age, IQ, and baseline scores, no significant differences were noted in cognition between treatment groups. Clinically meaningful changes were generally similar for risperidone and placebo patients. Mild to moderate somnolence occurred in only 2% of patients treated with either risperidone or placebo. The change in cognitive testing was not different in subjects experiencing somnolence as an adverse event (AE) compared with subjects not experiencing somnolence.

CONCLUSIONS: Risperidone treatment resulted in no decline in cognitive function among children and adolescents. These results extend on previous results from risperidone studies in DBD in patients with lower IQ.

PMID: 20035593 [PubMed – indexed for MEDLINE]

Pediatr Clin North Am. 2009 Dec; 56(6):1481-99.

Oral health of indigenous children and the influence of early childhood caries on childhood health and well-being.

Schroth RJ, Harrison RL, Moffatt ME.

Department of Pediatrics & Child Health and Department of Oral Biology, University of Manitoba, 507-715 Mc Dermot Avenue, Winnipeg, Manitoba R3E 3P4, Canada. E-mail: umschrot@cc.umanitoba.ca

Dental caries in Indigenous children is a child health issue that is multifactorial in origin and strongly influenced by the determinants of health.

The evidence suggests that extensive dental caries has an effect on health and well-being of the young child. This article focuses on early childhood caries as an overall proxy for Indigenous childhood oral health because decay during early life sets the foundation for oral health throughout childhood and adolescence.

Strategies should begin with community engagement and always include primary care providers and other community health workers.

Indian Journal of Sleep Medicine (IJSM), Vol. 5, No. 3, 2010

PMID: 19962032 [PubMed – indexed for MEDLINE]

Endocr Dev. 2010;17:11-21. Epub 2009 Nov 24.

Role of sleep and sleep loss in hormonal release and metabolism.

Leproult R, Van Cauter E.

Department of Medicine, University of Chicago, Chicago, Ill., USA.

E-mail: evcauter@medicine.bsd.uchicago.edu

Compared to a few decades ago, adults, as well as children, sleep less. Sleeping as little as possible is often seen as an admirable behavior in contemporary society. However, sleep plays a major role in neuroendocrine function and glucose metabolism. Evidence that the curtailment of sleep duration may have adverse health effects has emerged in the past 10 years. Accumulating evidence from both epidemiologic studies and well-controlled laboratory studies indicates that chronic partial sleep loss may increase the risk of obesity and weight gain. The present chapter reviews epidemiologic studies in adults and children and laboratory studies in young adults indicating that sleep restriction results in metabolic and endocrine alterations, including decreased glucose tolerance, decreased insulin sensitivity, increased evening concentrations of cortisol, increased levels of ghrelin, decreased levels of leptin and increased hunger and appetite. Altogether, the evidence points to a possible role of decreased sleep duration in the current epidemic of obesity. Bedtime extension in short sleepers should be explored as a novel behavioral intervention that may prevent weight gain or facilitate weight loss. Avoiding sleep deprivation may help to prevent the development of obesity, particularly in children.

PMID: 19955752 [PubMed – indexed for MEDLINE]

Oral Maxillofac Surg Clin North Am. 2009 Nov; 21(4):459-75.

Management of obstructive sleep apnea: role of distraction osteogenesis

Bouchard C, Troulis MJ, Kaban LB.

Department of Oral and Maxillofacial Surgery,

*Massachusetts General Hospital,
Harvard School of Dental Medicine, Boston, MA 02114,
USA. carlbouch@hotmail.com*

Distraction osteogenesis to expand the facial skeleton is an alternative to standard orthognathic surgery for selected patients with obstructive sleep apnea. For children with congenital micrognathia or midface hypoplasia, distraction osteogenesis allows large advancements without the need for bone grafting and

with less risk of relapse. For later-onset obstructive sleep apnea, distraction osteogenesis may represent an alternative when acute bone movement is expected to be difficult (scarring from previous surgery or radiation therapy) or when the risk for inferior alveolar nerve damage is unacceptable (patients older than 40 years).

PMID: 19944346 [PubMed – indexed for MEDLINE]