

Common physiological and behavioral problems in infants and children: What primary care physicians need to know

Bebeklerde ve çocuklarda yaygın fizyolojik sıkıntılar ve davranış sorunları: Birinci basamak hekimlerinin bilmesi gerekenler

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ABSTRACT

While some parents arrive at the physician's office with concerns about their child's behavior, others are unaware of their child's physiological and behavioral problems until they are asked specific questions about their child's conduct. An understanding of the child's physiological and temperamental factors, together with an assessment of the settings in which the behaviors occur are critical for the physician to provide a successful treatment plan, as are events preceding the behavior, and consequences of the behavior. Physicians must therefore ascertain potential problems and identify contributing factors in order to recommend specific interventions, or refer the child to the appropriate specialist. This article reviews common physiological and behavioral problems of children so that primary care physicians can effectively aid families in identifying problem behaviors and promoting appropriate behaviors.

Keywords: Behavioral problems, Children, Identification, Primary care

ÖZET

Hekim muayenehanesine getirilen bazı bebek ve çocukların ebeveynleri, bebek ve çocuklarının yaşadığı bazı fizyolojik fonksiyon sıkıntıları ve/veya davranış değişikliği konusunda endişeli iken, diğer bir kısmı, çocuklarının iletişimi konusunda spesifik sorular sorulmadıkça farkında değildirler. Bebekte ve çocukta fizyolojik sıkıntı ve davranış değişikliği yaratan faktörleri anlamak için, hangi durumlarda bu sıkıntıların ve davranış değişikliklerinin görüldüğünü, davranış öncesinde görülen olayları ve sonuçlarını doğru değerlendirmek, hekimler için kritik öneme sahiptir. Bu nedenle, birinci basamak hekimleri potansiyel problemleri kesinleştirmeli, spesifik girişim önerileri için eşlik eden faktörleri belirlemeli, ya da aileyi uygun uzmana yönlendirmelidirler. Bu makale, özellikle birinci basamak hekimlerine yol gösterici olması düşüncesi ile, bebek ve çocuklarda görülen yaygın fizyolojik fonksiyon sıkıntılarının ve davranış değişikliklerinin oluş nedenlerini ve problemlerini derleyerek, sosyal pediatri hekimlerinin etkili bir şekilde aileleri yönlendirmelerini, dolayısı ile çocuğun ve ailenin rahatlamasının sağlanması için hazırlanmıştır.

Anahtar Kelimeler: Davranış sorunları, Çocuklar, Belirleme, Primer bakım

Introduction

Primary health care visits during the first years of life are designed for more than physical complaints [1]. While a somatic history and physical examination are important components of each visit, many topics are discussed including nutrition, vaccinations, development, safety and behavior. Developmental or behavioral problems are identified in approximately 20% of children [2,3]. While some parents arrive at the pediatrician's office with concerns about their child's behavior, others are unaware of their child's problems until they are asked specific questions about their child's conduct. Physicians must therefore ascertain potential problems and identify contributing

factors in order to recommend specific interventions, or refer the child to the appropriate specialist. The current article reviews common behavioral problems of children so that physicians can effectively aid families in identifying problem behaviors and promoting appropriate behaviors.

Once a behavioral problem is identified, the physician must determine the nature and cause of the behavior. Understanding these aspects of behavior is necessary to distinguish typical behaviors for the age of the child from behaviors that are more problematic. In addition, contributory internal and environmental factor must be identified. Age, developmental level, temperament and personality along with the possibility of behavioral, developmental, emotional, or physical disorders must be considered. For example, a two year-old boy who often says “no” and cries if he does not get his way may be asserting autonomy in a developmentally expected manner. However, this same behavior in a four year-old may be more problematic. When evaluating a four year-old exhibiting such behaviors, one needs to consider the possibility that the child has developmental delays. Children with language delays, intellectual disabilities, and autism spectrum disorders have an increased frequency of behavioral and emotional disorders [3].

Children vary in how they approach and respond to different situations. Some children are upset by a sudden change in plans, while others are more flexible. Some children get tired at predictable times, while others get tired at more variable times. Some children are very active, while others are more sedate. These differences in behavioral tendencies are referred to as variations in temperament. Genetic factors account for a portion of the variation in temperament [4,5]. Thus, children living in very similar environments can exhibit very different behaviors. Certain characteristics of the temperament tend to be associated with an increased likelihood of difficult behaviors. These characteristics include low adaptability, high intensity, low regularity, withdrawal in new situations, and a frequently negative mood. However, the child’s specific temperament is less important than the relationship between the temperament and environmental expectations or demands [6]. Therefore, there is interplay between temperament and environment.

Prior to intervention, it is essential that a physician identifies how the parents understand and respond to aberrant behavior, and what attempts they have made to change the behavior. It is necessary for the pediatrician to consider family, community, and culture as contributing factors to the parents’ understanding of the behavior [4]. The parental response is often a primary reinforcer to a

repetitive behavior. Any response to a behavior that maintains or increases the frequency of the behavior is referred to as a reinforcer. For example, a child who wants attention from a parent previously occupied with a phone call may engage in disruptive behavior. Often, the parent will end the phone conversation to scold the child. The scolding is meant as punishment. However, the parent has unintentionally reinforced the disruptive behavior by paying attention to the child. Positive reinforcers, increase the likelihood of a behavior by providing something desirable to the child, often adult attention or an other item. Negative reinforcers increase the likelihood of a behavior by removing something aversive to the child. A teacher who tells students that if they complete homework on Monday through Thursday they will not be given homework on Friday is using negative reinforcement to increase the likelihood that students complete homework during the week. Punishment is a response to a behavior that decreases the likelihood of the behavior reoccurring in the future [7].

The aim of behavioral change should be to encourage appropriate behavior while discouraging the adverse behavior. Behavioral intervention occurs on several levels, depending on the particular problem and situation [3]. Antecedent modification refers to a change in factors that trigger the problem in order to prevent the problem behavior from occurring. Providing the child with instructions directly communicates appropriate behavior. Finally, consequence modification refers to an alteration in the family members’ responses to both the problem and desired behaviors.

We have identified and reviewed articles including a definition of these concepts by performing an extensive literature search on Medline. In addition publications in recent years were included. The current article, reviews common behavioral problems of children so that primary care physicians can effectively aid families in identifying problem behaviors and promoting appropriate behaviors.

Common Physiological and Behavioral Problems

Infantile Colic

Colic is generally defined as intense and excessive crying (more than 3 hours a day for more than 3 days per week) in an otherwise healthy infant [5]. During a colic episode, which usually occurs during the late afternoon or evening, infants may draw the knees up to the chest or rigidly stiffen the legs, flex the elbows, clench the fists and turn red. Colic affects 10% to 20% of infants younger than three months old. There is no seasonal variation in occurrence, and formula-fed and breastfed infants are equally affected. Colic usually begins at two to three weeks of age, peaks at

six to eight weeks, and resolves by three to four months of age [8]. It is a poorly understood, benign, and self-limiting condition. For an accurate colic diagnosis, physical conditions that can cause excessive crying must be excluded. Acute disorders that should be considered in a crying infant include infections (otitis media, urinary tract infection etc.), corneal abrasion, glaucoma, skull or long-bone fracture, incarcerated hernia, supraventricular tachycardia, intussusception, midgut volvulus, and a hair tourniquet on a digit [9]. A number of chronic conditions have been proposed to cause infantile colic, including allergy to cow's milk, lactose intolerance, constipation, and gastroesophageal reflux. While these problems are potential causes of crying in any one case, no well-designed study has suggested that these are common causes of excessive crying, and controlled studies using interventions targeting these problems have been mostly ineffective [10].

Sheldrick et al. have shown that infants exhibiting excessive crying differ in temperament from those who cry less [6]. Perhaps not surprisingly, parents tend to rate these infants as more intense and more difficult to soothe. However, the same characteristics are supported by independent observations. For example, White et al. reported that observers of infants undergoing a physical examination rated infants with colic as crying more intensely and being more difficult to console [11]. Infants who cry more persistently differ from those who cry less in that they have a higher crying-to-fussing ratio (suggesting greater intensity). In addition, according to Barr et al., infants with colic were found to be less likely to be placated by an orally administered sucrose solution than infants without colic [12].

Management of colic involves reassuring families that the infant is healthy and helping parents to understand temperament traits contributing to the increased crying. Parents often attempt to alter the environment of the crying infant by playing, feeding, or changing the infant's diaper. However, parents are less likely to consider the possibility that the infant may need to be quietly held, participate in nonnutritive sucking, or left alone to sleep [13]. If parents rapidly change from one activity to another in futile attempts to calm the infant, they may unknowingly change activities before the infant is able to communicate what he or she desires [3]. Currently, Barr et al., showed that the best evidence-based approaches to the management of colic include a trial of dietary modifications, limited amounts of herbal teas, and minimizing the infant's environmental stimulation level [8]. Also, prophylactic use of a probiotic in the prevention and treatment of colic is now in the current practice [14].

Sleep Resistance

The sleep cycle includes light sleep, deep sleep and rapid eye movement (REM) sleep. Most deep non-REM sleep occurs during the first third of the night, while most REM sleep occurs during the second half of the night [15]. While individuals wake briefly between sleep cycles they are generally unaware of these wakeful states.

Falling asleep is facilitated by a calming and familiar environment. For toddlers or preschoolers, a special blanket, stuffed animal, pillow, or other item may help the child fall asleep. However, these items are not recommended for infants, given an increased risk of sudden infant death syndrome [16]. Items that aid in calming a child before sleep are referred to as sleep associations, and when these items are not present, initiating sleep may be difficult [17]. In most children with night waking, the problem is not actually the waking, but rather trouble falling back to sleep without parental involvement, as the parent is part of the child's sleep associations [18]. For example, a parent and child sleeping in the same bed is typical in many cultures and does not contribute to night waking because the parent is present throughout the night. Other common problematic sleep associations include rocking or nursing an infant to sleep. In some cases, the parent is not actually part of the sleep association, but may be needed to help with a sleep association. For example, an infant may fall asleep sucking on a pacifier, but if the pacifier falls out of the child's mouth, a parent is needed to reposition the pacifier. Night waking can be managed by decreasing sleep associations. When parents complain of children with difficulty falling asleep, pediatricians should assess whether principles of a good sleep environment are being maintained (dark, quiet, no TV, no frightening stories and no meals prior to bed time) [19]. A consistent morning wakeup time, nap length and a positive, calming bedtime routine followed by a consistent bedtime are particularly important factors in providing a healthy sleep environment. It is often helpful for parents to complete a one- to two-week sleep diary focusing on whether the expected time of sleep is consistent with the child's physiological needs and tendencies. Attempting to put a child to sleep when they are not tired or expecting a child to sleep past the time their biological clock is waking them is not likely to be successful. However, even while maintaining an appropriate bedtime, the absence of a previously established sleep association is likely to interfere with a successful sleep routine. Mindell reported that it is often necessary for parents to let the child cry until they fall asleep [20]. While the protests on the first couple of nights can be dramatic and prolonged, most infants and toddlers will learn to fall asleep on their own

after a few nights. Ignoring night-time tantrums is often difficult for parents. However, checking on the child must be brief, and the parent must not reintroduce sleep associations (e.g., the parent must not lie down with the child), as this teaches the child that tantrums are effective in getting what he or she wants.

Breath-Holding Spells

Breath-holding spells are involuntary and reflexive and occur in response to an event that causes anger, frustration, fear, or minor injury. During a breath-holding spell, the child cries, becomes apneic at the end of exhaling, and then becomes pale or cyanotic [21]. The child may lose consciousness and have a brief convulsion. Breath-holding spells occur in about 5% of all children between the ages of six months and six years, and are most common in children between 12 and 18 months of age. Spells may occur as infrequently as several episodes per year and as frequently as multiple times per day. Breath-holding spells are rare beyond seven years of age and are thought to be caused by dysregulation of the autonomic nervous system [21,22].

Breath-holding spells have been associated with anemia and iron deficiency and therefore, hemoglobin and iron levels should be checked in children experiencing this behavior. In a child with a normal medical history, no further medical evaluation is needed. However, when the medical history is not clear, an electroencephalogram may be helpful in distinguishing breath-holding spells from seizures. In the child who turns pale and loses consciousness, an electrocardiogram is warranted to distinguish spells from conditions associated with cardiac arrhythmias, such as long QT syndrome. In infants, pediatricians should consider the possibility of gastroesophageal reflux resulting in apnea. In very rare cases, breath-holding spells have been associated with brain stem dysfunction caused by tumors or Arnold-Chiari malformations.

In most cases, treatment of breath-holding spells primarily involves parental support and reassurance that in cases where a child loses consciousness, breathing will begin again without intervention. If the child is anemic, he or she should be treated with iron, as this will decrease the frequency of breath-holding spells in many anemic children. Although treatment with iron and its actions have been less well studied, Daoud et al. [21] reported that this treatment also decreases the frequency of breath-holding spells in children who are not anemic. [23]. On the other hand, Garg et al. reported a case who was treated with oral theophylline [24].

Enuresis

Diurnal enuresis is wetting that occurs during the day. Nocturnal enuresis is defined as night-time urinary

incontinence that occurs at least twice a week for at least three consecutive months after the age of five years [25]. Parents should be reassured that bed-wetting in children five years and younger is normal. After the age of five, treatment depends on the degree of child and family distress. Diurnal enuresis is more commonly associated with physical or functional abnormalities of the urinary tract, requiring urological consultation. Both diurnal and nocturnal enuresis can be associated with chronic constipation.

Interventions for nocturnal enuresis include behavioral treatments or medications [7]. The most successful behavioral treatment involves a bed-wetting alarm; a small moisture detector that attaches to pajamas and sounds an alarm when the child begins to void. The alarm wakes the parents and child, so that the child can get up to use the bathroom. In the event that the alarm does not wake the child, the parents must wake the child while the alarm is sounding so that eventually the child learns to awaken to the alarm. Meritt et al [7]. reported that bed-wetting alarms have a 78% success rate when used for four to six months. Treatment tends to be more successful in cases where the child is highly motivated. Other behavioral treatments include scheduled awakenings and toileting through the night, hypnotherapy, and cognitive-behavioral approaches. These latter treatments have shown some success in limited studies but do not produce the robust results of studies investigating bed-wetting alarms [25].

Medications used for bed-wetting include desmopressin (ddAVP) tablets (intranasal formulations of ddAVP are no longer indicated for the treatment of primary nocturnal enuresis in children due to an increased risk of hyponatremia) [26]. Approximately 20% of children become consistently dry at night using either medication. However, the effects are not generally sustained when medication is discontinued. Water intoxication leading to hyponatremia is an infrequent but serious adverse side effect of ddAVP. Other identifiable and preventable risk factors contributing to hyponatremia are inappropriately high fluid intake, administration of a larger than recommended dose, a young age (< 6 years), and concomitant administration of other medications. Imipramine is rarely used due to the high risk of side effect and the life-threatening consequence of overdose [27]. Family counseling for enuresis should be the focus of all management strategies. First line treatments for enuresis include bed alarm therapy and desmopressin [28].

Encopresis

Encopresis is the recurrent voluntary or involuntary inappropriate passage of stool [29]. Unlike enuresis,

encopresis rarely occurs at night. The term encopresis is used to refer to all types of fecal incontinence. Encopresis is usually caused by chronic constipation with stool impaction and overflow incontinence. Severe constipation disrupts functioning of the anal sphincters, so that overflow incontinence is beyond the child's control.

The management of encopresis focuses on complete rectal evacuation, education and counseling. Regaining muscle tone of the anal canal usually requires two to six months. When a child is chronically impacted with stool, the muscle of the bowel wall is overstretched and stool evacuation is compromised, further exacerbating the problem. Due to the chronic stretching of the bowel wall, the child does not receive a signal to defecate as the stool accumulates. Some children lose the urge to defecate altogether or only get the urge to defecate when the stool is close to the external sphincter [29,30]. Dietary management is important for regular bowel movements. Children should be given a high-fiber diet with fruit juices such as a pear or peach juice, while milk intake should be decreased [31]. Treatment for encopresis requires colon disimpaction, followed by maintenance treatment. Use of a Fleet enema daily or every other day is the safest and most effective method of clearing the colon. Laxatives can also be effective. Once a child achieves consistent stool continence for several months (generally four to six) laxatives can be slowly discontinued. If the child has only been briefly constipated, laxatives can be weaned more quickly. Familial factors may enhance the treatment efficacy in encopresis [32].

Fears, Phobias and Anxiety

Fear and anxiety are part of the typical human experience and can be advantageous to the species in warning individuals of potential danger. Pediatricians should consider fears within a developmental context. Many fears are part of the normal childhood experience. However, for some, the severity of the fear response, and the inability to regulate emotions once aroused, can lead to an inordinate amount of time and energy spent on upset or worry [33]. Behavioral therapy consists of gradual exposure to a fearful stimulus. Exposure starts small with the least frightening element of a stimulus or situation and increases in small increments until the entire stimulus or situation is presented. Relaxation techniques are often taught to help regulate emotional arousal. Leaf et al. reported a schedule for daily practice, and recommended rewards for successful toleration of exposure [33]. For example, if a child is afraid of cats, the child might first be shown pictures of cats, then be exposed to an actual cat, followed by petting a cat someone else is holding, and eventually holding and petting the cat.

Medications for anxiety are considered in situations where behavior therapy is not an option or is ineffective. While pharmacologic treatment of anxiety in children is not well studied, selective serotonin reuptake inhibitors are the most frequently used medications [26].

Thumb-sucking and other common habits

Habits are defined as somewhat complicated, repetitive behaviors that become automatized, fixed, and are carried out easily and effortlessly [34]. Children exhibit many socially unacceptable habits, including thumb-sucking, nail-biting, skin picking, nose picking, hair-pulling (trichotillomania), tics, rocking, biting other children, and teeth grinding (bruxism). Other oral habits may involve lip sucking, lip biting, and toe sucking. Of these behaviors, thumb-sucking is most frequently addressed by physicians. Thumb-sucking is generally harmless in infants and young children, but can cause problems when it persists at a high frequency after four to six years of age. Some of the most common sequelae of thumb-sucking involve dental problems, such as an anterior open bite, decreased alveolar bone growth, mucosal trauma, and even altered growth of the facial bones. Some children suck their fingers rather than thumbs. Thumb or digit-sucking is a common cause of paronychia in children, and may also be associated with an increased incidence of accidental ingestion. Rarely, deformities of the fingers and thumb may occur. Thumb-sucking is associated with a stigma among both adults and peers. Friman reported that peers view children who thumb-suck as less desirable playmates [35].

Treatment for thumb-sucking should be considered in children older than four to six years and/or if thumb-sucking causes dental problems, digital malformations, or distress to the child [36]. However, if the thumb-sucking occurs infrequently (e.g., only at night) or only as a temporary response to a stressor, treatment is not generally indicated [37].

Conclusion

Primary care physicians must frequently address parental concerns about child behavior. An understanding of the child's physiological and temperamental factors, along with an assessment of the settings in which the behaviors occur, events preceding the behavior, and consequences of the behavior, are all critical for the physician to provide a successful treatment plan. In cases where assessment reveals behaviors that are severely disruptive, dangerous, pervasive, or occur in the context of multiple psychosocial stressors, referral to developmental and behavioral specialist should be considered.

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