

Excessive Crying of Infancy; A Report of 200 Cases

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Abstract

Objective: Excessive crying of infancy; a single continuous episode of crying more than 2 hours; is a common and often serious problem for parents. The objective of this study was to determine the incidence and etiology of acute episodes of excessive infant crying and to propose an approach for taking care of them.

Material & Methods: In this cross sectional study all patients less than 2 years old presented to the Emergency Department (ED) with ≥ 2 hours of crying with an unapparent cause for their parents were included in this study. Patients with fever, chronic disease and any disease 72 hours preceding the crying were excluded.

Findings: The incidence of excessive crying was 200 (1.74%) among the 13600 ED visits in 2 consecutive years .The three most common causes were colic (29.5%), acute otitis media (15.5%) and constipation (5.5%). History and physical examination led to diagnosis in 86% of cases.

Conclusion: Many conditions and diseases may cause excessive crying in infants. Complete history and physical examination of all parts of the body provide clues for the diagnosis in most cases and help the physician to avoid over diagnosis and over treatment.

Key Words: Infant, Excessive crying, Colic, Acute otitis media, Constipation

Introduction

Crying is the main route of communication between infants and their parents, which is generally considered an unmet need or distress^[1]. Crying, by stimulating and distressing the parents or caretakers, assures survival of the helpless

infant^[2]. It is the most common reason for seeking medical attention in the first three months of life^[3]. Typically, parents are able to identify accurately the cause of crying, but if it takes longer than usual or there are deviations in characteristics of cry, they seek medical attention^[1,2]. Apart from abnormal cries (e.g. Cat

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cry syndrome), which mandate neurological evaluation, the differential diagnosis of excessive crying; crying for more than two hours; varies widely between sepsis^[4] to smoking^[5]. Excessive crying, especially if it recurs, may distort parental infant relationship^[6] and contributes to physical violence^[7]. As Armstrong et al.^[8] described, many clinicians feel pressured by anxious parents to do something and this may lead to over diagnosis and over treatment. Different terms have been used to describe this: colic, irritable infant, unexplained or persistent crying^[9]. On the other hand different terms and different definitions led to inclusion of very dissimilar groups of infants^[6] with a diversity of etiologies and clinical courses^[1,10]. In addition, selection bias and absence of blinding were seen in most of clinical investigations^[9].

The goal of the present study was to determine the incidence and etiology of acute episodes of excessive crying in non febrile infants and to develop a stepwise approach for taking care of them.

Material & Methods

The setting for this cross sectional study was emergency department (ED) of Bahrami Children's Hospital, a tertiary care center for children, located in Tehran. During a 2 year period from 2005 to 2007 all patients under 2 years old with the presenting complaint of excessive crying were included. Excessive crying was defined as a single episode of more than 2 hours crying without any apparent cause to the parents. Patients with fever (Axillary temperature $\geq 37.5^{\circ}\text{C}$), history of a recently (72 hours) preceding acute disease and history of a chronic disease that may have contributed to the excessive crying, were excluded. Each patient had complete history taken and physical examination carried out by junior pediatric residents. Decisions regarding laboratory and imaging studies were made in consultation with senior pediatric residents or ED attending physicians if needed. After reviewing the medical records, final diagnoses were made and following

data registered: age, gender, and time of onset, duration and etiology of crying, diagnostic clues in history, physical examination, laboratory and imaging studies. Colic was defined as recurrent episodes of excessive crying in an otherwise healthy and adequately fed infant for more than 3 hours a day, occurring more than 3 days per week, beginning in the first 3 weeks of life and resolving by 3 months of age. Inpatients or outpatients were followed up after 48 hours by revisiting or by telephone. The study was approved by the local ethical committee and informed consent was obtained from the parents of each infant. Based on the incidence of excessive crying in previous studies^[1], conventional type I and II errors ($\alpha=5\%$ and $\beta=20\%$) were accepted and sample size was calculated equal to 185 cases. Statistical analysis was made by SPSS 11.5 (Chicago. IL.USA) using Chi square test and *P* value below 0.05 was considered significant.

Findings

Of the 13600 patients visited at the emergency department during the study, 200 patients (1.74%) fulfilled the criteria. One hundred and ten were male and 90 female ($P>0.05$). The median age of patients was 2 months with a range of 3 days to 24 months. More than 70% of patients were under 6 months old. In 137 patients (68.5%) excessive crying had occurred between 3 PM and midnight. The duration of crying prior to seeking medical attention varied from 0.5 to 48 hours. Colic (29.5%), acute otitis media (15.5%) and constipation (5.5%) were the three most common causes. The etiologies of excessive crying are shown in table 1. History together with physical examination led to final diagnosis in 86% of the patients. Inspection of the clothing to rule out allergy, dermatitis or foreign body (45 cases), otoscopy (31 cases) and rectal examination (16 cases) were the most single helpful initial examinations. In 19 patients, laboratory tests and in 17 patients imaging studies were performed. The most helpful laboratory tests were cell blood count, urine analysis, urine

Table 1- Differential diagnosis of 200 infants with excessive crying, based on their age group

Groups	Diagnosis	Under 3 Months	3-12 Months	Over 12 Months	Total (%)
Infectious Diseases N= 63 (31.5%)	Acute otitis media	5	23	3	31(15.5)
	Gastroenteritis	1	4	3	8
	Herpetic gingivo-stomatitis	0	1	3	4
	Oral thrush	4	1	0	5
	Roseola infantum	1	3	0	4
	Urinary tract infection	3	3	1	7
	Chickenpox	1	0	0	1
	Conjunctivitis	1	0	1	2
Gastrointestinal Diseases N= 80 (40%)	Bronchiolitis	1	0	0	1
	Gastroesophageal reflux	3	0	0	3
	Colic	51	8	0	59(29.5)
	Constipation	7	3	1	11(5.5)
Central Nervous System N= 4 (2%)	Intussusception	0	5	2	7
	Pseudotumor cerebri	0	2	1	3
Immunologic Reactions N= 18 (9%)	Choroid plexus papilloma	0	1	0	1
	DTP vaccine reaction	2	3	1	6
	Food allergy	3	2	4	9 (4.5)
	Drug hypersensitivity	0	1	1	2
Foreign Body N= 3 (1.5%)	Insect bite	0	1	0	1
	Eye	0	1	0	1
	Mouth	0	1	0	1
Others N= 32 (16%)	Truncal	1	0	0	1
	Opium withdrawal	0	1	0	1
	Inguinal hernia	4	2	2	8
	Hydrocele	1	1	0	2
	Circumcision site inflammation	1	3	0	4
	Napkin dermatitis	0	2	0	2
	Neuroblastoma	0	0	1	1
	Acute lymphoblastic lymphoma	0	0	2	2
	Endocardial fibroelastosis	1	0	0	1
	Contact dermatitis	0	2	1	3
	Overfeeding	0	2	0	2
	Nasal obstruction	0	2	0	2
Unknown	1	3	0	4	
Total (%)		92 (46)	81 (40.5)	27 (13.5)	200 (100)

culture and lumbar puncture (to rule out pseudotumor cerebri) and the most useful imaging study was Ultrasonography to rule out intussusception, gastroesophageal reflux and brain papilloma. In complicated cases, complementary oral and ophthalmologic examination as well as palpation of anterior fontanel could lead to diagnosis.

Discussion

During the 2-year study period, 1.74 % of all patients seen in the ED of this Children's Hospital were brought because of excessive crying. The most common causes of the discomfort revealed to be colic, acute otitis media or constipation.

In a study by Poole^[1], 56 infants with excessive crying were evaluated and acute otitis media, colic, corneal abrasion and constipation were the most common causes. About 61% of patients had serious condition which required prompt treatment and in 18% of patients no underlying disease was found. Nooitgedagt et al^[10] reported 88 infants admitted to the hospital because of excessive crying for whom the outpatient management was unsuccessful. In majority of patients, no underlying cause was found and the crying improved within a few days without a specific intervention. This discrepancy of results may be due to small number of patients and different patient selection criteria. In addition, most researches have been on clinical samples, so little is known about infants whose parents have not sought medical help^[9].

Colic is a condition in which excessive crying is part of the clinical diagnosis^[2]. The traditional definition of colic is based on the "Rule of Three" which was mentioned earlier. Recurrence of excessive crying increases the likelihood of colic^[6]. Overall prevalence rates of colic varied between 1.5 to 11.9 percent of infants^[6]. A cry of colic was described as urgent, piercing, arousing and sad by parents^[2]. Although colic typically disappears by the end of 3 months, there are studies however, showing that the problem may persist longer^[11]. Persistence of excessive crying beyond 6 months of age heralds a higher prevalence of eating and sleeping difficulties^[12]. Colic appears to be influenced directly by the parents' (or caretakers') behavioral adjustments in interactional contacts and playful dialogues^[2].

Other causes of excessive crying include a broad range of diagnoses: Infectious diseases (sepsis, meningitis, encephalitis, osteomyelitis, septic arthritis, and urinary tract infection), drug intoxication, undernutrition, teething, cow's milk intolerance, gastroesophageal reflux disease, arrhythmias, intussusception and so forth; some of these need urgent diagnosis and treatment^[13]. The physical examination led to the diagnosis in 122 (61 %) of cases and the history and physical examination, taken together, provided the diagnosis in another 172 (86 %) of cases. As Poole pointed out thorough physical examination is crucial to reach the final diagnosis^[1].

Among laboratory tests, urine analysis and urine culture were the most helpful tests that led us to the diagnosis. Urinary tract infections must be considered in the differential diagnosis of infants with excessive crying.

Ultrasound was the most useful imaging study. There was one case of 2 days irritability and persistent crying that in physical examination showed abdominal tenderness and in CT scan of the abdomen a left adrenal mass, this was subsequently diagnosed as neuroblastoma.

There has been an exponential increase in the diagnosis of gastroesophageal reflux disease (GERD) in infants with excessive crying over the past few decades^[14]. Since gastroesophageal reflux (and not GERD) is normally seen in young infants, GERD should be considered only when the crying persists beyond 4 months, when there is no diurnal variation, and the child is vomiting, has poor weight gain and when the crying is prolonged and extreme^[15].

Conclusion

The study provides clues for the diagnosis of excessive crying in non febrile infants and may expand our knowledge about the causes of this common complaint of infancy. Thorough physical examination in association with complete history leads to final diagnosis in majority of cases.

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