CAUSES OF FEVER IN THE FIRST MONTH OF LIFE

Imad Al-Sadoon & Mea'ad Kadhum Hassan

Imad Al-Sadoon MBChB, DCH, FRCP
Mea'ad Kadhum Hassan MBChB, CABP
Department of Pediatric, College of Medicine, University of Basrah, Iraq.

ABSTRACT

The causes of fever were studied in 88 febrile neonates admitted to neonatal care unit in Basrah maternity and child hospital.

Sepsis was the commonest cause (40.9%), followed by bronchopneumonia (29.5%) and dehydration fever (19.3%).

Poor feeding was the commonest presenting symptom in neonates with sepsis; cough and shortness of breath were the commonest presenting symptoms in neonates with bronchopneumonia. The mortality rate was significantly higher in neonates with fever more than 2 days duration.

INTRODUCTION

Fever in infants less than 3 months of age is considered a problem serious enough to require hospitalization for empiric antibiotic therapy [1].

There are two explanations for a raised body temperature (above 38Co rectal) in infants. First, the infant may have an increased set point temperature or second, infants may be overheated. An increase in set point temperature is a common finding in an infected newborn although this is a less reliable and less marked sign than in older infants and children with infection[2].

The distinction between an overheated babies and those with an increased set point temperature is important[2], although it is often difficult to differentiate them[3].

Bacterial infection is a serious threat to the neonate while in the nursery. Meningitis and sepsis are more common than any other time in life, and the signs of these infections are often subtle and non-specific[4].

The objectives of our study were: 1. to determine the causes of fever in neonates during the first month of life; 2. to investigate usefulness of physical signs in diagnosing bacterial diseases that may require antibiotic therapy in neonates; and finally to study the outcome of such neonates.

PATIENTS AND METHODS

All febrile neonates admitted to the neonatal care unit in Basrah Maternity and child hospital during the period from the 1st of September 1993 to end of August 1994 were included in the study. Fever was defined as a body temperature $\geq$ 38Co (rectal or axillary).

A history of pregnancy and delivery was obtained. The history of neonate included environmental temperature, weight loss, symptoms of infections (lethargy, poor sucking, irritability, respiratory, distress, vomiting, abdominal distension and diarrhoea).

The laboratory work up included complete blood picture, blood culture, urinalysis and culture and lumber puncture. Chest roentgenogram was done if the neonate had respiratory symptoms.

All neonates who were evaluated for sepsis received antibiotics until culture results were available.

Statistical significance was determined by X^2.

RESULTS

88 neonates with fever were included in the study during the 12-months study period, 56(63.6%) were males and 32(36.4%) were females.

They were divided into 3 groups according to their age:- group 1 included 39 neonates less than one week old, group 2 included 29 neonates 1-2 weeks old, and the third group included 20 neonates older than 2 weeks.

Clinical signs and symptoms (other than fever) were shown in table 1. Poor feeding was the commonest symptom (48.8%) followed by cough and dyspnea (37.5%).

The final diagnosis of febrile neonates in the 3 groups was shown in table 2.

It shows that there is a significant difference in the incidence of septicaemia and bronchopneumonia (sepsis occurs significantly more in the first 2 weeks of life while bronchopneumonia occurs significantly more in neonates older than 2 weeks).

The presenting signs and symptoms (other than fever) in relation to the final diagnosis were shown in table 3.

It shows that poor feeding was the commonest presenting symptom in neonatal sepsis while cough and shortness of breath were the commonest presenting symptoms in neonates with bronchopneumonia. The difference was statistically highly significant. Table 4. shows the outcome of such neonates in relation to the duration of fever. It shows that the mortality rate is significantly higher in neonates with history of fever of more than 2 days duration.

Table 1. Clinical data of febrile neonates.

signs and symptoms	No. of patients	%
Poor feeding	43	48.8
Cough and dyspnea	33	37.5
Jaundice	20	22.7
Convulsion	7	8
Vomiting and diarrhea	9	10.2

Table 2. The final diagnosis in febrile neonates in relation to age.

Diagnosis	Age			Total	%
	<1wk	1-2wk	>2wk		
Septicaemia	15	16	5	36	40.9
Bronchopneumonia	7	7	12	26	29.5
Dehydration fever	12	4	1	17	19.3
Meningitis	2	-	1	3	3.4
Kernicterus	-	3	-	3	3.4
UTI + GE	-	-	1	1	1.1
Umbilical sepsis	-	1	-	1	1.1
Infected myelomeningocele	-	-	1	1	1.1

X^2 for septicaemia and bronchopneumonia:-

X^2 7.92 P<0.05 df 2

Table 3. The presenting signs and symptoms in relation to the final diagnosis.

Signs and symptoms	Septicemia No. 36	Bronchopneumonia No. 26	Dehydration fever No.17	Kernicterus No. 3	Meningitis No. 3
Boor feeding	20	12	6	3	2
Cough, S.O.B	6	26	1	-	-
Jaundice	11	-	5	3	1
Convulsion	4	2	-	-	1
Diarrhea and vomiting	3	5	-	-	1

X^2 for septicemia and bronchopneumonia in respect to poor feeding and cough and dyspnea.

X^2 12.696 $P<0.01$

Table 4. The outcome of febrile neonates in relation to the duration of fever.

Duration of fever	Outcome				Total	
	Well		Death			
	No.	%	No.	%	No.	%
≤ 2 days	48	82.7	10	17.2	58	66
> 2 days	18	60	12	40	30	34
Total	66	75	22	25	88	100

X^2 5.45 df1 $P<0.05$

DISCUSSION

Fever in the neonate has been defined as body temperature $\geq$ 38.1Co[1].

Fever in the newborn has been considered an inconsistent sign of sepsis[5]. However, later on it was found to be both highly sensitive and specific sign in full term neonates with sepsis[6].

In our study 36(40.9%) of febrile neonates had positive blood culture for bacteria (neonatal sepsis). The incidence of neonatal sepsis was significantly higher in the first 2 weeks of life.

The second cause of admission was bronchopneumonia 26(29.5%), which was significantly higher in neonates older than 2 weeks, while dehydration fever was a common cause of fever in the first week of life especially in summer time 17(19.3%).

Other causes include meningitis, kernicterus, gastroenteritis, umbilical sepsis and infected meningomyelocele.

In the newborn period, most authors suggest that the possibility of serious bacterial infection must be considered in any infant appearing even mildly ill without evident cause, although almost any abnormal clinical sign may be associated with serious infection[7]. Poor feeding and respiratory difficulties seem to be most helpful in our study. Poor feeding was found to be statistically associated with neonatal sepsis while cough and shortness of breath were statistically associated with bronchopneumonia. Spector et al, found that clinical signs of cardiovascular dysfunction i.e tachycardia, arrhythmia and poor peripheral perfusion in the absence of congenital heart disease seem most helpful[7].

The mortality rate was found to be significantly higher in neonates with history of fever more than 2 days duration regardless of the cause of fever.

From this study we conclude that poor feeding is a serious sign in neonates with fever, cough and dyspnea are other important signs and duration of fever is a significant factor in the outcome of febrile neonates.

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