A New Approach to Sidereal Sleeplessness

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This is a report on two groups of zinc supplemented children who did not sleep through the night. The infant who wakes up every night between midnight and 7:00 a.m. is the bane of every physician who cares for children. The aggravation and frustration of the parent who has to get up night after night to soothe the wakeful child is even greater. Emotions can range from shame and guilt to rejection and even child abuse. No term has been applied to this problem that happens while the stars are out. Sidereal Sleeplessness (S.S.) describes the regularity and inevitability of its occurrence. Table 1 is a list of the characteristics of S.S.

Several studies have shown the marginal nutriture of zinc in our own as well as foreign countries (Prasad, 1976). VValravens and Hambidge (1976) demonstrated the need for zinc supplement in formula-fed infants. Since then both Enfamil and Similac have been zinc supplemented. Their study showed that the incidence of loose stools and irritability was significantly reduced with added zinc. No reference was made to nighttime S.S. They recommend the need for zinc to be near 1 mg/kilo to prevent a deficiency.

Moynahan et al. (1974) have shown that zinc supplement corrects the faulty assimilation of this critical element in acrodermatitis enteropathica (A.E.). Some of the clinical features of A.E. are shown in Table 2.

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TABLE 1

SIDEREAL SLEEPLESSNESS S.S.
1.6 mo. - 30 mos.

2.Wakeful 12m to 6 am 1 + times
3.May or may not be irritable diurnal
4.Aggravated after infection
5.Improved with Sulfa 3-4 wks. (15-20%)
6.Zinc Supplement improve (50-75%)
7.At risk for child abuse
8.Persecuted by father figure

TABLE 2

ACRODERMATITIS ENTEROPATHICA MODEL FOR ZN DEFICIENCY

1.Skin lesions
2.Diarrhea
3.Alopecia
4.Tongue involvement
5.Severe nail dystrophy
6.Anorexia - failure to thrive
7.Monilial and bacterial infections
8.Lethargy, depression, emotional changes

Patients on total parenteral nutrition develop signs and symptoms of A.E. unless zinc supplemented as described by Arakawa et al. (1976). Some similarities are shown in Table 3.

TABLE 3

T.P.N. MODELS FOR ZN DEFICIENCY

1. Diarrhea even when serum not low
2. Apathy and depression when plasma Zinc below 20 ug/100ml.
3. Dermatitis similar to A.E. when below 30 ug (Nasolabial folds)
4. Alopecia 7-14 days p dermatitis

In the present study two groups of S.S. children were investigated. One is a small double blind study of six children in a skilled nursing care center, and the second group (26) is taken from the author's private practice. The first group was given zinc-manganese supplement in a double blind fashion. Zn-Mn or distilled water were given in juice or water, five drops morning and evening. Nighttime activity was charted by experienced room mothers over a 16 week period. Quality of sleep and degree of restlessness were recorded hourly from 11:00 p.m. to 7:00 a.m. When the study was finished three patients were much quieter while on zinc. The other three showed mild increase of nighttime activity or no change while on zinc. The formula for zinc supplement is shown in Table 4.

TABLE 4

ZN FOR 1 YEAR OLD

Zinc Sulfate 10%
Manganous Chloride 0.5%
Dist H_2O q.s. 60 cc
5 drops am and pm in juice or water
Deliver appr. 12 mg Zinc and .925 mg Mn

From 26 private patients on zinc-manganese drops, all were waking nightly between midnight and 7:00 a.m. The average age was 22.3 months. The sleepless period averaged 12.3 months and ranged from 1 to 48 months. Table 5 shows the age range, days on supplement, and time till sleeping range, as well as previous sleepless period.

Table 6 lists percent of positive response (sleeping at night) for both groups. The best response is noted in the group of private patients. 76.5 percent of these children *were* sleeping after an average 6.22 days. In some cases patients were sleeping through the first night and in several the response was the third night.

TABLE 6

S.S. SIDEREAL SLEEPLESSNESS

		POSITIVE RESPONSE	
=No. Pts.		**Sleeping**	**Percent**
JTH	**34**	**27**	**76.5**
PCCC	**6**	**3**	**50**

Report of Three Cases

An 18-month-old boy (B.G.) was brought to the office in February, 1978, because the father told the mother, "You have to find something to make him sleep at night." B.G. had never slept through the night since birth. The father insisted there was something wrong and the "doctor should find out what it was." Physical exam was virtually normal. Ear drums were only marginally red. This was the first patient ever placed on zinc supplement. He was given five drops morning and evening. The second night he slept through and has ever since.

Case #2 was a post-pertussis patient, four months old, who, after recovering from pertussis, was irritable, anorexic, and had S.S. Physical findings were noncontributory. Within three days of zinc supplement all the above symptoms ceased and he was smiling again. When zinc was omitted for three to seven days the original symptoms recurred. He now sleeps well and the mother remembers to give him zinc.

Case #3 was a nine-month-old male infant (A.P.) who was brought in by a terrified mother who related that the father had gotten up the previous night when the child was wakeful. In the process of trying to get him quieted the father had threatened him with physical harm. A.P. had been waking

TABLE 5

S. S. SIDEREAL SLEEPLESSNESS

No. Pts.	Av. Age	Av. Days till sleep	Av. Sleepless period
Sleeping	(range)	(range)	(range)
	22.3 mo.	6.22 days	12.3 mo.
	(1 mo-6 y)	(1-30)	1-48 mo.)
3	60 mo.		

nightly for several months. Again physical exam revealed no chronic pathology to cause wakefulness. Within four days of starting zinc he was sleeping through the night.

When supplementing S.S. infants with zinc, serendipitous improvement in appetite, daytime irritability, diarrhea, skin rashes, and pallor were noted. Those older children whose wakefulness was followed by climbing out of bed, getting in bed with parents, sleeping on the stairway, etc., also lost these annoying "habits."

Since sources of zinc in the food chain are the same as those of iron, the iron deficient child could also be zinc deficient. The following deserve consideration for zinc supplement:

1. Sidereal sleeplessness
2. Diarrhea
3. Breast fed infant with iron or zinc deficient mother.
4. Iron deficient infant
5. Alopecia
6. Candidiasis and other rashes
7. Recurrent infections.

In summary, this study of S.S. children shows that 74.6 percent of a group of private patients responded positively. The need for zinc has been demonstrated in several other disease states as well. A daily need of approximately 15 mg of zinc is estimated for the adult. Infants and children need 1 mg/kilo per day. After positive response, when zinc is withheld symptoms of S.S. often return in one week. The mother is easily reminded to resume the supplement. Just as iron deficiency is common in our children today, zinc, which comes from the same food sources, is probably also deficient.

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