

Generalized seborrhoeic dermatitis

Clinical and therapeutic data of 25 patients

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Messaritakis, J., Kattamis, C., Karabula, C., and Matsaniotis, N. (1975). *Archives of Disease in Childhood*, 50, 871. **Generalized seborrhoeic dermatitis: clinical and therapeutic data of 25 patients.** Twenty-five infants with generalized seborrhoeic dermatitis have been studied with reference to the provision of optimum treatment. Leucocyte counts and chest x-ray examination are recommended in every case. Irrespective of clinical findings, antibiotics should be given to patients with overt bacterial infection and those with leucocytosis, shift to the left, and toxic granulation. One group of infants was treated with vitamin B complex plus biotin given slowly intravenously over 24 hours; a second group was given only biotin intravenously over 2-3 hours; and a third group only biotin over 1-2 minutes. A fourth group was treated with both biotin and antibiotics for confirmed or suspected superimposed bacterial infection. The results were excellent in all groups. Skin lesions improved within 4-8 days and cleared completely within 15-30 days. Intravenous administration of biotin is recommended as less painful and less dangerous than multiple intramuscular injections.

Localized seborrhoeic dermatitis is a common benign, self-limiting skin eruption of infants under 6 months of age. Generalized seborrhoeic dermatitis is uncommon, persistent and, if untreated, may cause death from superimposed bacterial infection, particularly with pathogenic staphylococci (Svejcar and Homolka, 1950; Avrouskine, 1952; Gautier, Gautier and Th  lin, 1957). Leiner (1908) was the first to describe generalized seborrhoeic dermatitis in infants associated with intractable, severe diarrhoea, recurrent local and systemic infections, and marked wasting.

The precise aetiology of seborrhoeic dermatitis is unknown. Biotin (vitamin H) deficiency has been said to be a deciding pathogenetic factor (Gy  rgy *et al.*, 1941; Freudenberg, 1942; Svejcar and Homolka, 1950; Rook, Wilkinson, and Ebling, 1968). Miller *et al.* (1968) described a 3-month-old infant with refractory dermatitis, failure to thrive, and intermittent diarrhoea who survived only after transfusion of fresh compatible plasma. A deficiency of the opsonic activity of serum complement was implicated later in the aetiology of his illness (Miller and Nilsson, 1970). Jacobs and

Miller (1972) described another 2 sibs with the same clinical picture. In one of them who survived only by transfusion of fresh plasma the same immunological deficit was detected.

This paper presents our experience of the effectiveness of a modified, quick, and safe treatment with biotin of a relatively large series of cases of generalized seborrhoeic dermatitis and emphasizes the indications for adding antistaphylococcal treatments. Some interesting characteristics of the disease are also discussed.

Patients and methods

Twenty-five infants aged 40 days to 6 months suffering from generalized seborrhoeic dermatitis who were admitted to the 1st Department of Paediatrics, Athens University, during the years 1971 to 1973 were studied. Most of the patients were referred to us because of failure of various treatments with either local applications and antibiotics or antibiotics alone given for periods ranging from 20 to 60 days.

The history of each patient obtained on admission included information on the sex of the infant, the age at onset of the disease, the month of the year when the disease began, the site of the first lesions, the diet of the mother during pregnancy, the infant's diet, and family

history. Cultures from the skin scales, white blood cell count and differential, and chest x-rays were obtained on admission. Clinical examination revealed overt skin infection in 2 infants. One had profuse conjunctivitis and pyoderma, and the other diffuse skin infection resembling erysipelas. A third, severely ill infant was found to have staphylococcal pneumonia.

The patients were allotted to one of the following four treatment groups.

Group 1. Six patients were given 5 mg biotin plus vitamin B complex slowly intravenously over 24 hours using the preparation Béczyme (Roche), each 2-ml ampoule of which contained biotin 0.5 mg, vitamin B₁ 10 mg, vitamin B₂ 4 mg, nicotinamide 40 mg, vitamin B₆ 4 mg, panthenol 6 mg, and vitamin B₁₂ 8 mg.

Group 2. Six patients were given 5 mg biotin alone intravenously over 2-3 hours.

Group 3. Seven patients were given 5 mg biotin alone intravenously within one to two minutes.

Group 4. Six patients were treated with biotin intravenously plus antibiotics. The 2 infants with overt superimposed bacterial skin infection were given methicillin intravenously. The infant with staphylococcal pneumonia was given methicillin intravenously and kanamycin intramuscularly. 3 infants with patchy consolidation seen on chest x-ray examination were treated with penicillin intramuscularly and cloxacillin orally.

Results

Clinical findings. Of the 25 infants, 18 were male and 7 female. The age at onset of the disease ranged from 5 days to 6 months, but in most cases it was 2 months. In 12 patients the disease occurred during the winter (Fig.). The first skin lesions appeared more often in the genitocrural folds and over the scalp, gradually spreading over the body. 6 infants had been exclusively breast-fed until the day of their admission and another 3 until a fortnight before the onset of the disease. The remaining 16 had been artificially fed. None had been given supplemental vitamins.

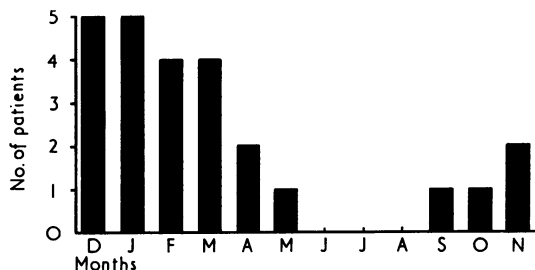


FIG.—Seasonal distribution of 25 infants with generalized seborrhoeic dermatitis.

The diet of the mothers in pregnancy was rarely rich in biotin.

Laboratory examinations. Cultures from skin scales yielded pathogenic staphylococci in 12 infants, Gram-negative bacteria in 2, and *Monilia albicans* in one (see Table). Leucocyte and polymorphonuclear counts were normal in all patients except for the 3 with super-imposed bacterial infection. 3 patients on admission had a considerable increase in leucocytes and polymorphonuclears with a shift to the left and toxic granulation (see Table). Typical x-ray signs of staphylococcal pneumonia were present in an infant admitted severely ill. 3 others with normal leucocyte counts showed patchy consolidation. The chest in the remaining 21 infants were normal.

Results of treatment. In 22 out of 25 patients in all treatment groups the skin lesions improved 5-8 days after the start of treatment. 3 patients in group 4 with overt bacterial skin infection and staphylococcal pneumonia had to be given a second dose of biotin 10 days after the initial doses because of unsatisfactory response. The skin lesions disappeared completely in patients of all groups 15-30 days after the beginning of treatment.

In all follow-up periods of from 4 to 27 months no patient had a recurrence of skin eruption.

Discussion

The increase in the incidence of the disease during winter noted in Greece has previously been observed only in Germany (Kokil, 1954). Of interest is the fact that first-degree relatives of two of our patients also suffered from generalized seborrhoeic dermatitis, which may indicate an increased family incidence of the disease. Generalized seborrhoeic dermatitis was once thought to affect almost exclusively breast-fed infants, but later it was shown that artificially-fed infants could also be affected (Svejcar and Homolka, 1950; Avrouskine, 1952; Kokil, 1954; Petrocini and Debernardi, 1954; Gautier *et al.*, 1957; Nisenson, 1957). In the present study the ratio of breast-fed to artificially fed infants is about 1:2. In Greece the breast-feeding rates during the first 4 months of life have been estimated as follows: first month 57.3%, second month 40.4%, third month 33.7%, and fourth month 32.6% (Michael, 1964). We conclude that the kind of feeding does not affect the incidence of the disease.

Complications of generalized seborrhoeic dermatitis, either mild or severe, are directly related

TABLE
Laboratory findings in 25 infants with generalized seborrhoeic dermatitis

Case no.	Leucocytes (/mm ³)	Differential count (%)*					Toxic granulation	Culture from scales	Complications
		B	N	E	M	L			
1	13 000	3	27	2	4	64	0	Negative	—
2	7000	2	22	3	3	70	0	"	—
3	11 500		16	6	2	76	0	"	—
4	25 000	14	60	2	5	19	+	Staphylococcus	Pyoderma and conjunctivitis
5	6600	2	14	2	7	76	0	Negative	—
6	16 000	3	27	3	4	63	0	"	—
7	7200	3	28	2	6	61	0	Staphylococcus	—
8	12 000	2	30	3	2	63	0	Staphylococcus	—
9	10 000	1	36	4	3	56	0	Gram neg. bacteria	—
10	8000	4	42	2	2	50	0	Gram neg. bacteria	—
11	7000		27	3	8	62	0	Negative	—
12	30 500	15	74	2	2	7	+++	Staphylococcus	Staphylococcal pneumonia
13	7000		38	4	2	56	0	Negative	—
14	18 900	6	16	6	4	68	0	Monilia albicans	—
15	10 800	6	21	2	4	67	0	Staphylococcus	—
16	8500	1	16	2	7	74	0	Staphylococcus	—
17	27 500	17	62	3	3	15	++	Staphylococcus	Diffuse skin infection
18	11 700	2	22	6	8	62	0	Staphylococcus	—
19	8800		27	2	4	67	0	Negative	—
20	6400		32	2	2	64	0	Staphylococcus	—
21	9200	2	34	1	3	60	0	Staphylococcus	—
22	8400	2	32	2	4	60	0	Negative	—
23	10 600	4	37	1	3	55	0	Staphylococcus	—
24	12 800	3	40	2	5	50	0	Staphylococcus	—
25	7300		28	4	5	63	0	Negative	—

*B = bands; N = neutrophils; E = eosinophils; M = monocytes; L = lymphocytes.

to the invasion of the abraded skin mainly by pathogenic staphylococci (Svejcar and Homolka, 1950). Early detection of this complication is most important because of the need for prompt antibiotic treatment. The diagnosis can be made either clinically or with the aid of simple laboratory investigations. Leucocytosis with shift to the left and toxic granulation is a significant finding in infants with bacterial infection (Wintrobe, 1967). We therefore recommend antistaphylococcal treatment in every patient with clinical or x-ray evidence of superimposed bacterial infection, and also in asymptomatic patients who have increased leucocyte counts with shift to the left and toxic granulation.

Patients with cultures of skin scales positive for pathogenic staphylococci or bacteria but without clinical or laboratory evidence of bacterial infection should be followed up for repeat leucocyte counts. 3 patients of the present series who were suspected on x-ray evidence of having lung infection were given antibiotics though they were probably suffering from a mild viral infection, so that, had chest x-rays and leucocyte counts been repeated antibiotics could have been avoided. The fact that antibiotics have undoubtedly contributed to the improved prognosis of generalized seborrhoeic dermatitis was well illustrated by Svejcar and

Homolka (1950). The introduction of penicillin in the treatment of the disease in their clinic was followed by a remarkable decline in the mortality rate.

Biotin, or vitamin H, takes part as a coenzyme in the metabolism of fats, carbohydrates, and inorganic substances (Mistry, Dakshinamurti, and Modi, 1962; Mistry and Dakshinamurti, 1964; Marks, 1968). Biotin is found either in food (egg yolk, liver, and yeast are rich in biotin) or is produced by normal intestinal flora. In food biotin is bound to protein and in order to be effective must be broken down to the unbound, or free form, which is absorbed from the small intestine and stored mainly in liver and kidney cells (Bowden and Peterson, 1947; Mistry and Dakshinamurti, 1964; Marks, 1968).

Biotin levels in the blood can be influenced theoretically by the following three factors acting together or separately (1) daily intake, (2) absorption, and (3) metabolism of the vitamin. Poor daily intake results in low biotin blood levels. Glanzmann (1949) was the first to influence seborrhoeic dermatitis in breast-fed infants by supplementing the mother's diet. Infection is said to lower biotin blood levels of the nursing mother or the infant. Diarrhoea particularly interferes

with both production and absorption of biotin (Svejar and Homolka, 1950; Gautier *et al.*, 1957; Diétel, 1967). In the present series patients with superimposed infection were given a second course of treatment because of unsatisfactory response.

Biotin assays of the blood and urine in breast-fed infants with generalized seborrhoeic dermatitis have shown lower levels of biotin compared with healthy infants of the same age. Artificially-fed infants with generalized seborrhoeic dermatitis had normal blood and urine biotin levels (Svejar and Homolka, 1950). Nevertheless, giving biotin to both breast-fed and artificially fed infants with the disease has resulted in remarkable improvement. Since 1948, when biotin was first used in the treatment of generalized seborrhoeic dermatitis, several therapeutic modifications have been proposed. Multiple intramuscular injections of biotin followed by oral administration of the vitamin have been generally recommended (Freudenberg, 1949; Glanzman, 1949; Thélin, 1949; Berger, 1950; Lemke, 1950; Svejar and Homolka, 1950; Martin, 1951; Avrouskine, 1952; Bulgarelli, 1952; Kokil, 1954; Petrocini and Debernardi, 1954; Gautier *et al.*, 1957; Nisenson, 1957; Baril *et al.*, 1961).

Nisenson (1969) has treated infants with extensive seborrhoeic dermatitis by giving intramuscular injections of biotin to the nursing mother. In the present series only one and rarely two intravenous injections of biotin at a single dose of 5 mg were attempted, with excellent results. This is less painful, reduces the incidence of abscess formation, is time saving for the nursing staff, and has had no side effects in our experience.

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