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TREATMENT OF COLLODION BABIES WITH A TOPICAL PREPARATION CONTAINING LACTIC ACID*

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Lamellar ichthyosis (congenital ichthyosiform erythroderma) is a serious form of ichthyosis[1-3]. It is inherited as an autosomal recessive trait. In this disorder a thickened stratum corneum forms at birth in some infants as a collodion-like envelope over the entire body. These newborn infants are called "collodion babies". Soon after birth the collodion membrane peels off leaving a reddish skin which can very easily become infected and may result in pyoderma, causing fatal sepsis and pulmonary infections within the first days or weeks of life[1,4].

Topical preparations containing alphahydroxy acids and closely related compounds have been found to exert a profound antikeratinogenic effect in ichthyosis or other forms of epidermal keratinization[2,5]. This article presents five infants with congenital ichthyosis who appeared to be collodion babies at birth (Table I). All five infants were admitted to the Neonatology Unit of the Hacettepe Children's Hospital between February 1979 and September 1980 and were treated with a topical preparation containing 5% lactic acid, an alphahydroxy acid compound.

Case Reports

Case 1: Baby T., a fifteen-minute-old male infant, was transferred to the Neonatology Unit because of his grotesque appearance. He was one of twins, the products of the third pregnancy of a twenty-five-year-old mother. The breech delivery occurred at thirty-eight weeks gestation. His twin was a normal female. The mother's two previous babies, one female and one male, had both been born prematurely with a clinical appearance similar to that of the present infant. They had died within the first few days of life. The parents were first degree relatives.

Physical examination revealed a weight of 2900 gm, and the appearance of the skin was compatible with the diagnosis of collodion baby (Figure 1). The baby was placed in an incubator and fed through a nasogastric tube. A topical preparation

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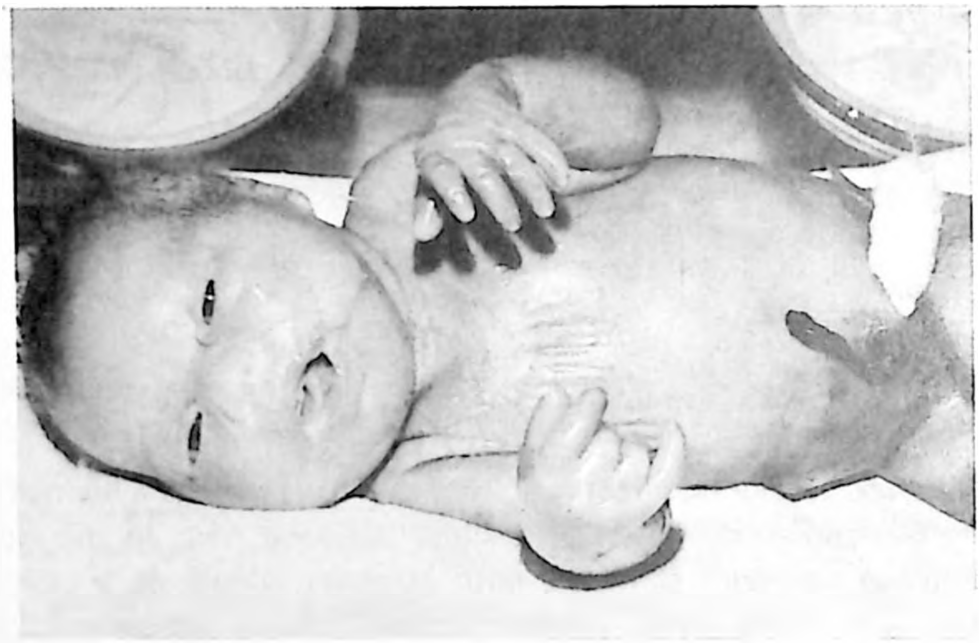

Figure 1.

The grotesque appearance of Case 1 at birth.

(vaseline) containing 5 percent lactic acid was applied to the skin three or four times daily. The collodion membrane peeled off shortly after birth leaving a reddened skin. To prevent irritation and water-loss, the skin was covered with vaseline and gauze. Within four to five days the skin became smooth and clear. Ectropion and eclabium disappeared. 13 days after admission the patient was discharged. The mother was instructed to treat the child with a topical application of an antikeratinogenic preparation once or twice weekly. Examination at the 4th and 10th months showed normal motor and neurological development of the infant. Only a few small grayish-brown scales with slightly raised edges were noted on the scalp, forehead, neck and flexor surfaces of the extremities (Figure 2).

Case 2: Baby B. was born after a full term pregnancy with a birthweight of 3100 gm. She had four healthy siblings. Her parents were first degree relatives. After birth she was diagnosed as a collodion baby and was transferred to the Neonatology Unit.

In addition to the antikeratinogenic therapy, 50 mg/kg cephalexin was given orally for ten days to treat a staphylococcal dermal infection. On the 18th day after admission the baby was discharged with skin that appeared to be normal. The 4th month examination revealed an infant with ichthyosis vulgaris-like scales on the skin. Physical and neurological examinations were within normal limits.

Case 3: Baby U., a full term male infant who weighed 2400 gm at birth, was diagnosed as a collodion baby. The parents were not relatives, and their other five children were healthy. A topical preparation containing lactic acid was used with success, and he was discharged from the hospital on the 11th day of life. On

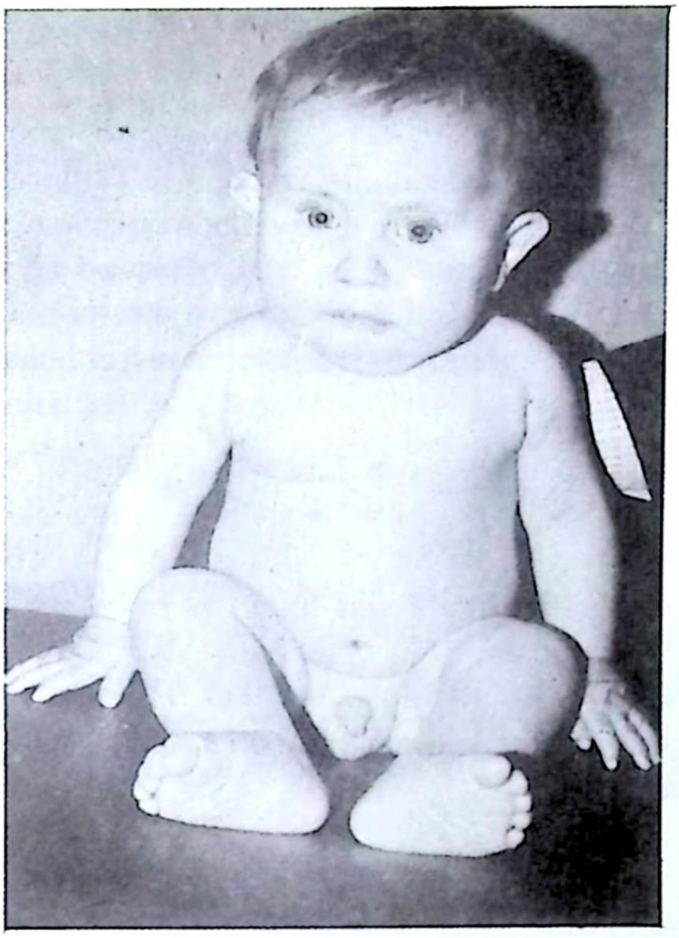

Figure 2.

Case 1 at the 10th month examination reveals a normal skin and healthy appearance.

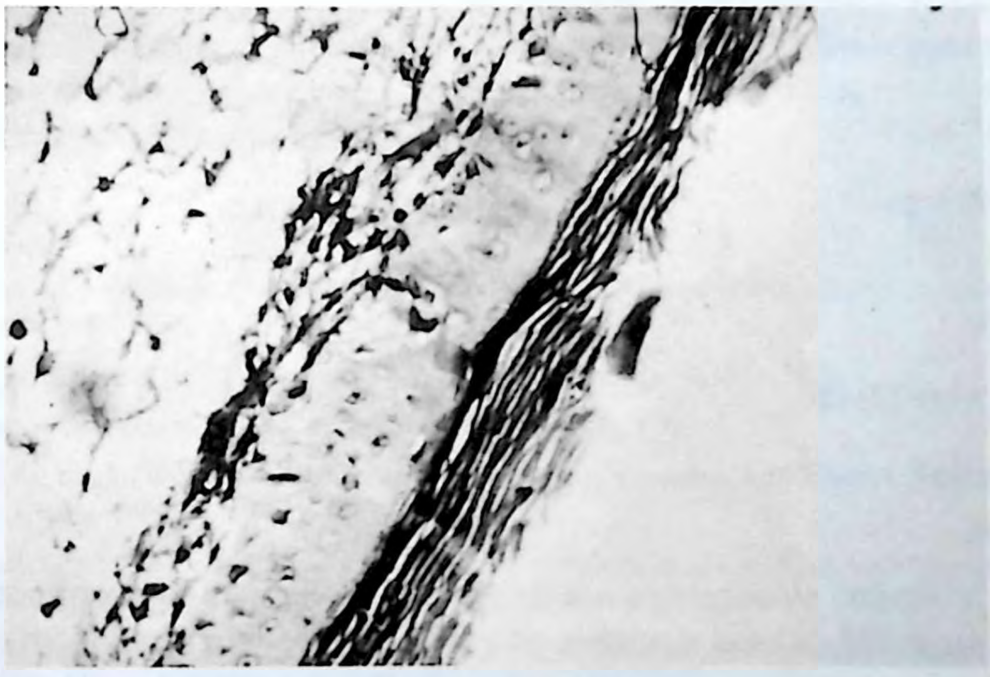

Figure 3.

Histologic section of skin biopsy in Case 4 on the first day shows marked hyperkeratosis (H + E x 100).

reevaluation at the 2nd and 8th months the child was in good health and had small ichthyotic scales in the fold regions of the body.

Case 4: Baby A. was born to a 16-year-old primigravida mother after 35 weeks gestation. The parents were first degree relatives. The diagnosis of collodion baby was made immediately after birth. Histologic sections of the skin biopsy specimens showed remarkable hyperkeratosis and in parts, a thickened granular layer (Figure 3). The patient was treated similarly to Cases 1-3 and discharged on the 15th day in very good condition. No skin abnormality was noted at a subsequent examination at the 4th month.

Case 5: Baby S. was born following a 38-week gestational period. She was the second infant of an 18-year-old mother. Family history revealed that the first child had died of a similar skin disorder on the 18th day of life. The parents were first degree relatives. The present patient was found to have infected collodion membranes, eclabium and ectropion. Skin biopsy revealed congenital ichthyosis, and Staphylococcus aureus was isolated from the skin. The patient was treated with a topical antikeratinogenic. She was discharged on the 22nd day after admission with a normal appearing skin.

TABLE I

Data on Five Collodion Babies

Case No.	1	2	3	4	5
Sex	M	F	M	F	F
Gestational age (weeks)	38	40	40	35	38
Birthweight (gm)	2900	3100	2400	2070	2300
Affected siblings	2	—	—	First child	1
Skin biopsy	—	—	—	+	+
Discharge time (days)	13	18	11	15	22
Reexamination (months)	4-10	4	2-8	1	—

Discussion

The term "collodion baby" refers not to a clinical entity but is a common designation for several well defined disorders which can be distinguished from each other by family history and by observation. Van Scott[5] suggested a classification for ichthyosis with four groups based on anatomical, cellular, kinetic and genetic observations which seem to provide the best framework for approaching these

disorders. The presence of positive family histories, the absence of congenital abnormalities, and normal motor and mental development led us to conclude that the collodion appearances in our patients were manifestations of the autosomal recessive form of lamellar ichthyosis (congenital non-bullous ichthyosiform erythroderma).

Collodion babies have a rather good prognosis in the western world. The case fatality rate of this disease is low and depends, in part, upon the degree of prematurity[1]. We reviewed our hospital records and found that 12 (66.6%) out of 18 patients with congenital ichthyosis admitted to Hacettepe Children's Hospital within the last twenty years died in the hospital within the first weeks of life. None of them was premature. In spite of treatment with keratolytic agents or liquid vaseline, the longest survival time in these patients was four weeks. The most important causes of death in these cases were infections such as gastroenteritis, bronchopneumonia and sepsis. In Turkey, sepsis is the major cause of infant morbidity and mortality[6,7]. It was felt that to increase the survival rate for this disease, early application of antikeratinogenic agents for the control of these membranes, prevention of secondary skin infections and protection against other nosocomial infections in these infants are necessary.

Summary

Five collodion babies were treated with a topical preparation containing 5% lactic acid as the antikeratinogenic agent. Examinations during the first 10 months of life revealed normal physical and neurological development of the infants, but slight ichthyotic scaling was observed in all patients. This observation indicates the importance of the early use of antikeratinogenic agents in the treatment of ichthyotic membranes and the prevention of secondary infections. Protection of these children from infections may be life-saving.

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