COLLODION SKIN OF THE NEWBORN

BY

O. D. FISHER and KATHLEEN G. McKEE

From the Department of Child Health, The Queen's University of Belfast

(RECEIVED FOR PUBLICATION MAY 26, 1954)

Although some superficial desquamation, especially about the flexural creases, is common in the neonatal period, a collodion-like covering of the skin is rare. On this account two cases of collodion skin of the newborn, each of which illustrates a different aetiology, are reported.

Case Reports

Case 1.—Patrick G. was born on December 27, 1952, as a breech delivery and weighed 7 lb. It was the fourth pregnancy, the other children being alive and well except for the elder twin of the second pregnancy who died at 3 weeks of age from congenital hypertrophic stenosis of the pylorus. There was no history of ichthyosis in the family.

At birth the infant cried readily but had a varnished appearance due to an almost complete covering of parchment-like skin. This was thickest over the anterior surface of the thorax and abdomen, less on the posterior surface, and absent over the head where covered with hair. The face was affected, causing a characteristic, unpleasant, immobile expression. The eyelids were sealed together and although the mouth and nostrils were patent they had a wrinkled and fissured appearance. The limbs were similarly affected and movements were restricted; the hair was normal as were the nails beneath their covering. Although the infant appeared immobile in his stiff casing, he had a vigorous cry and sucked well. Warm, sterile olive oil was applied daily to the surface of the body. Within two days the eyelids had partially separated giving a slit-eyed appearance; the eyes were normal. As the collodion-like coating hardened it began to crack, especially about the joints as the infant became more active (Fig. 1A). Likewise longitudinal cracks developed over the trunk, revealing a 'beefy', red appearance beneath. During the next two weeks the false skin peeled off leaving intact and normal skin underneath.

Unfortunately, on the ninth day the left breast became flushed and a supplicative mastitis developed. This infection, caused by Staphylococcus aureus, responded to surgical drainage and streptomycin therapy. During the next few weeks three or four fine layers of papery scales desquamated readily from the head and axillae and slightly from the trunk. The infant thrived satisfactorily and at 14 months of age the skin appeared to be perfectly normal. The Wassermann reactions of the mother and child were negative.

Histological examination of the membrane showed it to be composed of condensed layers of keratin. A biopsy of the skin was performed and Dr. J. E. Morison reported that the section showed no significant abnormality. The skin appendages were normally developed except perhaps for a slight dilatation of the orifices of the hair follicles and some slight retention of hyperkeratotic squamous debris.

Case 2. Valerie McC. was born on May 13, 1944, at full term, weighing 6 lb. 1 oz. and the delivery was normal. It was the third pregnancy and the mother's Wassermann reaction was negative. The first infant died after an operation for reduction of congenital dislocation of the hips, and the second died at the seventh day of life with spina bifida. There was no family history of ichthyosis. At birth the patient cried immediately but was noticed to be tightly encased in a yellowish membrane, resembling oiled silk, over the head, body and limbs. Cracks rapidly appeared about the flexures and the covering began to flake off revealing the skin beneath of an angry red colour with a tendency to bleed along the creases of the neck and groins. The hands and feet were slightly oedematous but the nails beneath the covering layer seemed normal (Fig. 1B). The eyelids were sealed together and puckered at the corners but the next day they could be partially separated giving a slit-eyed appearance; the eyes were normal. Warm, sterile olive oil was applied locally and thyroid extract, gr. 1/2 twice a day, was given for the next two weeks. During the following few days the membranous layer was gradually shed; over the head, although some of the hair came away with the covering substance, normal scalp and hair were left beneath. Likewise the nails remained intact and normal.

The infant fed and thrived well, but on discharge at 3 weeks of age the skin of the abdomen was becoming dry and papery.

At 9 months of age the infant was normal except for the persistence of dry and flaky skin of the groins and abdomen. At 8 years and 9 months of age the child presented typical mild ichthyosis. The skin of the abdomen (Figs. 2a and 2b) was chiefly affected; the condition was worse in the winter and improved in the summer months.
COLLODION SKIN OF THE NEWBORN

FIG. IA.—Case 1, aged 4 days.

FIG. IB.—Case 2, aged 4 days.

Discussion

Collodion skin of the newborn presents a characteristic picture which was originally described by Perez in 1880. From the character of the membranous covering, which had been likened to paraffin or waxed paper, oiled silk, parchment, collodion skin, and the appearance of such children, a variety of descriptive terms have been coined and have caused much confusion in both the literature and the textbooks. The clinical appearance is well illustrated by the two cases recorded above which also support the conjecture that there are two separate aetiological groups.

In the first group, known as lamellar desquamation of the newborn, are placed those cases in which the skin is histologically normal and remains so after desquamation has taken place. At birth such infants appear 'varnished' due to a layer of cornified substance resembling collodion. This is usually generalized but may be localized as in the case reported by Finlay and Bound (1952) in which only the feet and hands were affected. The covering cracks and desquamates within a few days or weeks, leaving below the skin which is normal in all respects. The progress of such infants is excellent as their vitality and general health are unimpaired.

The term lamellar exfoliation of the newborn was suggested by Grass and Torok in 1895 and the same year Bowen recorded a further case. He postulated that the membrane was the persistence of a layer of cells of the epidermis distinct from the horny layer and was homologous with the epitrichial layer which covers the hairs of the embryo of certain animals. He also showed that this epitrichial layer usually disappeared about the seventh month of foetal life. Persistence beyond this period causes lamellar desquamation and accounts for the presence of normal skin when this layer is shed. If this assumption is correct it is surprising that the condition is not seen more frequently in premature infants but no such association has been observed. The histological examination of the covering layer confirms, as in Case 1, that it is composed of horny cells and is of epidermal origin. This disproves Kaposi's (1895) suggestion that it is due to an excessive amount and persistence of the vernix caseosa. Thus use of the terms ichthyosis sebacea and sebacorhoea squamosa neonatorum, which he employed to describe the condition, should be discontinued. Similarly the term, lamellar ichthyosis, as applied by Cockayne (1933) and by Finlay and Bound (1952) to the first group of cases is confusing because collodion skin of the newborn due to lamellar desquamation may be mistaken for, and is to be distinguished from, true ichthyosis which forms the second aetiological group. This congenital disorder of the skin, characterized by a lack of dermal secretions, is associated with dryness and scaliness of the skin, and, in some instances, with warty growths. There is an irregular recessive hereditary tendency.

In its most severe form, the latter disease causes the harlequin foetus. Such a gross abnormality is unmistakable but less severe forms of ichthyosis may present at birth with collodion skin which is to all intent identical with that of lamellar desquamation. After the collodion covering is shed ichthyosis develops afterwards. That redness of the skin is more commonly a feature of ichthyosis than of lamellar desquamation, as suggested by Cockayne (Ellis, 1936), is not borne out by the two cases reported here, both of which had a beefy red skin at first, though bleeding occurred in the creases of the neck and groin in our case of ichthyosis. This is not to be confused with congenital ichthyosiform erythrodermia which may also present at an early age and be familial. In this condition the skin, which is scaly and thickened, is in addition erythematous, while flexural surfaces are particularly involved and
here horny excrescences may accumulate. The scalp, which is usually affected, is pink and scaly.

To place a case of collodion skin of the newborn into the correct category, observation for at least the first year of life is required to exclude the chronic ichthyotic condition. In the literature on this subject, however, the majority of case reports lack information on the subsequent progress or of the histology necessary to allocate them to either of these aetiological groups.

Summary

Two further cases of collodion skin of the newborn are recorded. They illustrate the clinical appearance of this condition and two main aetiological groups: (1) Lamellar desquamation in which the skin is subsequently normal, and (2) ichthyosis in which the skin develops the typical changes associated with this disease.

We should like to thank Professor F. M. B. Allen for permission to publish these cases and Dr. J. Martin Beare for his helpful advice.

REFERENCES
