Case Report

A New Case of Neu–Laxova Syndrome: Infant with Facial Dysmorphism, Arthrogryposis, Ichthyosis, and Microcephalia

Abstract

Neu–Laxova syndrome (NLS) is an autosomal recessive disorder characterized by central nervous system anomalies, facial dysmorphic features, anomalies of limb and genitalia, intrauterine growth retardation, skin disorders, and other congenital abnormalities. In this article, we present a newborn infant who was born with facial dysmorphic features, flat nose, ichthyosis, rocker bottom feet, and fixed flexion contractures. We believe that these clinical findings in this patient are consistent with features of NLS.

Keywords: *Ichthyosis, microcephalia, Neu–Laxova syndrome*

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Introduction

In 1971, Neu *et al*.[1] and in 1972, Laxova *et al*.[2] reported babies with abnormal facial features, severe intrauterine growth retardation, anomalies of the limbs, microcephaly, ichthyosis, and the other anomalies in heart and central nervous system (CNS). In 1979, Lazjuk *et al*.[3] described another newborn with similar findings and suggested that their case was obviously a case with features of the Neu–Laxova syndrome (NLS). Approximately 75 cases of NLS have been reported in the literature.[4]

Chen has mentioned other CNS defects such as the absence of corpus callosum and lissencephaly as other anomalies found in this lethal syndrome.[5]

In this article, we present a newborn infant who was born with facial dysmorphic features, flat nose, ichthyosis, rocker bottom feet, and fixed flexion contractures. We believe that these clinical findings in this patient are consistent with features of NLS.

Case Report

A female newborn with gestational age of 35 week and 4 days was born with ichthyosis and multiple congenital anomalies. The baby was born through cesarean section because of fetal distress. Apgar score was 4 and 7 within 1 and 5 min, respectively. Her birth weight, height, and head circumference were 1420 g, 38 cm, and 26 cm, respectively. Her mother was a healthy 25-year-old first gravid woman and had no history of any diseases during pregnancy or maternal drug exposure. Her father was a healthy 30-year-old man. Her parents were relatives as they were cousins.

In fetal sonography, single umbilical artery and microcephaly were reported. Chromosomal analysis performed on amniotic fluid sample showed a normal karyotype (46, XX) [Figure 1a].

On physical examination, a cellophane-like membrane covering the entire skin and scaling of the skin was noted [Figure 2]. The infant also had a slanted forehead, broad nasal root, ectropion, micrognathia, and low-set ears. Additional abnormal clinical findings included flexion contractures of the upper and lower extremities and rocker bottom feet [Figure 3].

The results of the laboratory tests such as TORCH study, complete blood count, liver function tests, and serum electrolytes were all within normal limits.

The chest radiograph showed low grade of RDS and abdominal ultrasonography, and echocardiographic examinations showed no abnormal findings expect patent foramen ovale [Figure 1b].

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The skeletal survey was normal.

Brain computed tomography scan demonstrated microcephaly, lissencephaly, and colpocephaly [Figure 4a and b].

Histopathology of skin lesion showed hyperkeratosis, focal parakeratosis, and thickened granular layer with mild superficial perivascular infiltrate of lymphocytes in the dermis.

Supportive treatment for the patient was started. Respiratory support was begun as Nasal continuous positive airway pressure (NCPAP). Her respiratory sign healed without surfactant administration, and after 18 h, NCPAP was discontinued. Then, she was kept in a humidified incubator to prevent hypothermia and dehydration. Skin emollients-containing petrolatum was used according to dermatology consultant. The fluid and electrolyte balance was maintained.

Discussion

There are intrafamilial and interfamilial variations in clinical features in NLS.[6] Intrauterine growth retardation and polyhydramnios are prenatal signs of NLS.[7] Skin manifestations of syndrome are scaling over the face, scalp, back, and arm, some degree of ichthyosis, and generalized edema. Edema may not be presented or may be limited to the scalp or over the dorsum of the hand and foot. Infants with NLS have multiple abnormalities in CNS such as Dandy–Walker malformation, microcephaly, lissencephaly, choroid plexus cysts, dysgenesis of the corpus callosum, and ventriculomegaly.[6,8] They have abnormal faces with characteristics such as micrognathia, low-set ears, hypertelorism, retrogress forehead, cleft palate, or lip.[6,8] Ocular signs contain exophthalmos, absence of eyelids, and cataract.[6,8] The disorder is also characterized by limb anomalies such as syndactyly, flexion deformity, and rocker bottom feet.[8] Some affected infants may show additional physical findings such as cystic hygroma, small thorax and abdomen, hypoplastic lungs and genitalia, short umbilical cord, unilateral absence of kidney, and muscle atrophy.[8] Congenital heart defect includes atrial or ventricular septal defects, patent ductus arteriosus, and transposition of the great arteries.[8]

In 1982, Curry classified NLS according to severity and heterogeneity of syndrome into 3 groups. Group I represents joint contractures, partial syndactyly, thin scaly skin, mild ichthyosis, and poor mineralization of bones. In Group II, massive swelling of hands and feet, ichthyosis, and undermineralized bones are the principle findings. Group III has hypoplastic digits, severe ichthyosis (harlequin-like fetus), short limbs, and stick-like long bones.[9]

Causes

NLS is transmitted as an autosomal recessive trait, and the risk of transmitting to children is 25 percent. Fifty percent of children are carriers of the disease and do not show phenotype of the disease. Twenty-five percent of these children are genetically normal (for that particular trait).[4]

Shaheen *et al*. and Mattos *et al*. have separately presented possibility of serine metabolism disorder responsible for this feature.[10,11]

Diagnosis

The diagnosis of NLS would be made postnatally according to clinical investigations and characteristic features. Some imagings may also be applied for diagnosis of this disorder

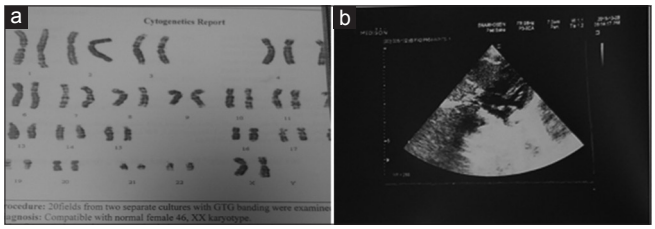

Figure 1: (a) Chromosomal study on amniotic fluid. (b) Echocardiography

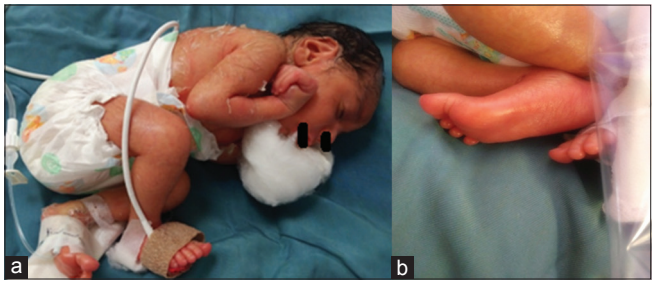

Figure 3: (a) Rocker bottom feet. (b) Microcephaly and low-set ear with contracture anomaly

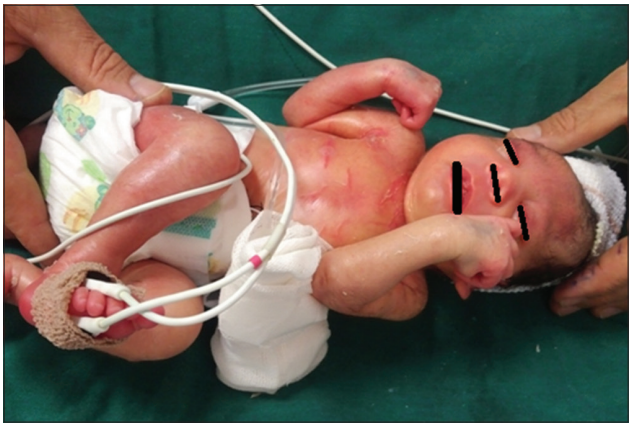

Figure 2: A celephon-like membrane covering the entire skin, generalized erythema, ectropion, and arthrogryposis is noted

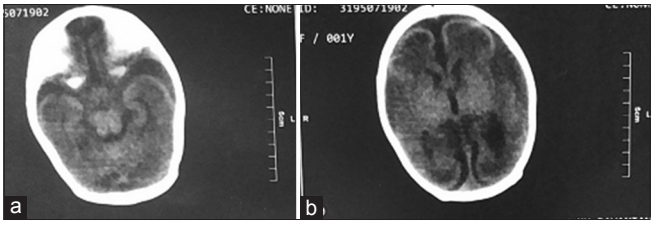

Figure 4: (a and b) Computed tomography scans of brain

such as brain sonography and echocardiography.[6] The diagnosis of NLS in prenatal period can be made through fetal sonography. Findings in fetal sonography that suggest NLS are polyhydramnios, intrauterine growth retardation, generalized edema, and abnormality of CNS.[12]

Treatment

Treatment of NLS is symptomatic and supportive.[8] A team of medical professionals such as neonatologist, pediatric cardiologist and neurologist, psychologist, and other health-care providers are essential for the proper management of patients.[8]

Prognosis

Infants with NLS usually are stillborn or die several days after birth. The main reasons of death are chest constriction, heart diseases, and infection. Horn *et al*.[13] reported two siblings with NLS who lived over 10 months of age and they offer that there may be a milder form of this syndrome.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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