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Clinical Letter

Corticosteroid Therapy in Neonatal Incontinentia Pigmenti With Asymptomatic Cerebral Lesions

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Incontinentia pigmenti (IP), also known as Bloch-Sulzberger syndrome, is a rare X-linked dominant neurocutaneous disorder.[1] Mutations of the inhibitor of kappa B kinase gamma gene (*IKBKG*, previously *NEMO*) have been reported as the cause of IP.[2] Complications involving the teeth, hair, nails, eyes, and central nervous system (CNS) are occasionally observed. We describe the use of corticosteroid therapy in a neonate with IP and without clear neurological symptoms in whom multiple cerebral lesions were observed on magnetic resonance imaging (MRI) on postnatal day nine.

Patient description

This 2986-g term female infant was born to a primigravida mother by normal vaginal delivery with Apgar scores of 9 at both one and five minutes. The mother had a medical history of IP. The infant had skin changes at birth, including erythema and papules on the arms, limbs, and trunk (Fig 1), and was transferred to Iwaki City Medical Center on the first day of life. The diagnosis was IP. We had an impression that she was a little quiet baby. Muscle tonus was normal and Moro, rooting, and sucking reflexes were also normal. As there were many reports about neonatal brain injury with IP, head MRI was performed on day nine. Diffusion-weighted images revealed lesions in the left frontal and right occipital lobes, and a right periventricular lesion showed high-intensity spots on T1-weighted images (Fig 2). Electroencephalography on day nine was normal. We diagnosed multiple cerebral inflammatory lesions and started corticosteroid therapy with prednisolone (2 mg/kg/day) on day 10. MRI on day 32 revealed no new lesions, and cerebral lesions nearly disappeared. The high-intensity right periventricular

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Ethical Approval: Consent was obtained from the patient's mother to publish this case. No identifiable information was made available. Genetic analysis was conducted after obtaining written informed consent approved by the Ethical Committee of Hirosaki University Graduate School of Medicine (2016-288).
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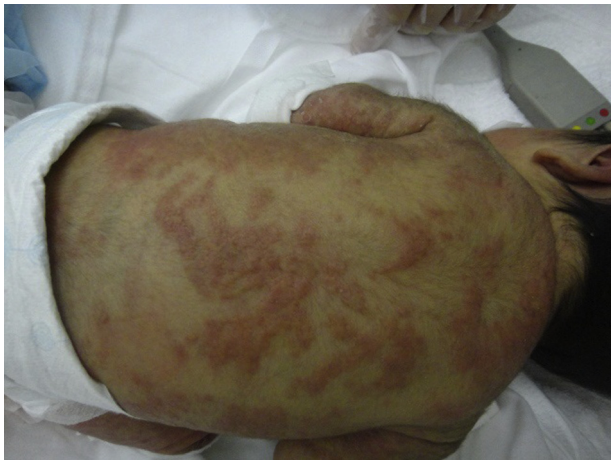

FIGURE 1. Photograph of the patient on her first day of life showing a rash erythema and papules along Blaschko lines. The color version of this figure is available in the online edition.

lesion still persisted on T1-weighted images (Fig 2). Prednisolone therapy was stopped on day 41. There were no remarkable side effects of prednisolone. A blood sample was obtained for genetic testing, which identified a deletion of exon 4 to 10 in the *IKBKG* at a later date. She was discharged on day 45. Follow-up head MRI on day 67 found disappearance of the high-intensity periventricular lesion (Fig 2). Her neurodevelopment was normal at age 19 months.

Discussion

This is the first reported neonate with IP and multiple cerebral lesions but no clear neurological symptoms. Although the pathogenesis of CNS disorders in IP is unclear, *IKBKG* mutations are associated with the activation of eotaxin, a potent eosinophil-specific chemokine that is strongly expressed by endothelial cells in IP and is related to perivascular and intravascular eosinophil accumulation.[3,4]

We chose corticosteroid treatment because of its anti-inflammatory effects. There have been two previous reports of corticosteroid therapy for CNS disorders in IP.[5,6] Our patient's multiple cerebral lesions had disappeared on the day 67 MRI. However, it is difficult to prove its effectiveness because the lesions might have disappeared without therapy.

In previous reports about neonatal brain abnormalities with IP, MRI was performed because the patients had clear neurological symptoms, such as seizures, coma, and apnea. Furthermore, in all cases in these reports, head MRI findings included some abnormalities, such as white matter disease, cerebral inflammatory lesions, or necrosis. Our patient's MRI revealed multiple cerebral lesions in spite of her having no clear neurological symptoms.

In conclusion, we describe a nine-day-old girl with IP who had multiple cerebral lesions identified on MRI and no clear neurological symptoms. Because cerebral lesions or other CNS disorders may induce intellectual disability, we recommend performing head MRI for all neonates with IP even if the neurological symptoms are mild.

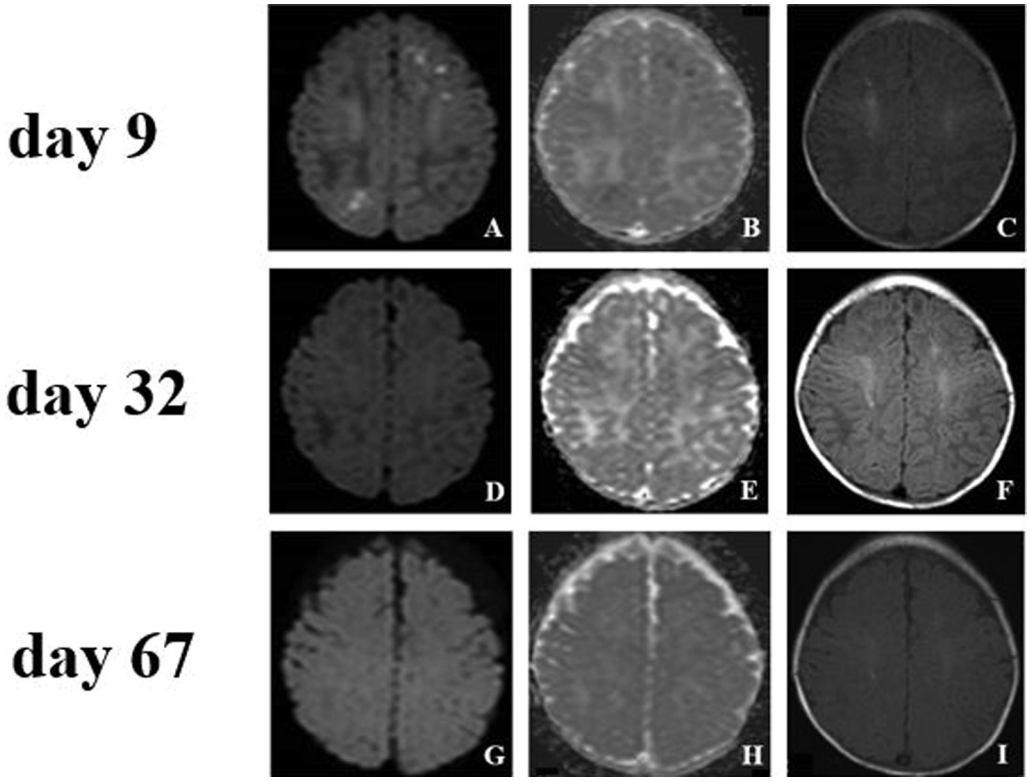

FIGURE 2. Magnetic resonance imaging (MRI) on day 9 (A–C), day 32 (D–F), and day 67 (G–I). (A) Diffusion-weighted image (DWI) with multiple high-intensity areas in the left frontal and right occipital lobes. (B) Apparent diffusion coefficient (ADC) with multiple low-intensity areas in the left frontal and right occipital lobes. Low-intensity areas correspond to the lesions shown in (A). (C) T1-weighted image (T1WI) with high intensity in the right periventricular lesion. (D) DWI and (E) ADC show disappearance of the high-intensity areas. (F) T1W1 shows the remaining high-intensity right periventricular lesion. (G) DWI and (H) ADC show no new lesions. (I) T1W1 shows disappearance of the high-intensity right periventricular lesion.

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