Usefulness of Spinal Ultrasonography in the Neonate and Early Infants

Motoshi MAEJIMA[1], Kyosuke TOSAWA[2], Kazuhiro YASUI[2], Mikiko MIYASAKA[3], Yoshiyuki TSUTSUMI[3], Shunsuke NOSAKA[3], Yuuji OSADA[4], Mamoru MATSUBAYASHI[2], Sumio MIYAZAKI[1], Torayuki OKUYAMA[2]

Abstract

Introduction: While magnetic resonance imaging （MRI） is useful for evaluating the spinal cord, it can be difficult to perform on pediatric patients who may require sedation.

Ultrasonography （US） can however be performed to evaluate the spinal cords of neonatal and infant patients with incomplete ossification. this technique has the advantage of being performed noninvasively without sedation. this study evaluated spinal ultrasonography findings frm neonates and infants and compared them with cases that underwent MRI.

Subjects and Methods: e subjects comprised 128 （61 males and 67 females） patients ＜7 months of age （mean age, 1 month） who underwent spinal US from April 2010 to March 2011. US involved placing the patients in the prone position and using a linear probe to identify the lumbosacral vertebral level and rendering the spinal cord. Thereafter, the lower edge of the conus medullaris was identi-ed, and the motion of the filum terminale and cauda equina was observed. e US findings included identifying the lower edge of the conus medullaris, spinal cord and spinal cord area findings, and movement of the cauda equina nerve. US diagnostic ability for a low-lying conus medullaris was evaluated by comparing the results with 38 cases that underwent MRI at a later date. The US equipment used was an AplioXG instrument （Toshiba, Tokyo, Japan） with PLT-805AT and PLT-1204BT probes or an ACUSON S2000 instrument （Siemens AG, Erlangen, Germany） with an 18L6 probe.

Results and Discussion: All the cases were evaluated from the area between the vertebral arches to the spinal cord/conus medullaris or filum terminale. US findings from the lower edge of the conus medullaris revealed 32 cases of a low-lying conus medullaris and two cases of a difficult to identify low-lying conus medullaris. US spinal cord and spinal cord area findings revealed 15 cases of filar cysts, 12 cases of spinal lipomas, one case of lumbar.

Vol.39 No. 1（2014） 11-21

Keywords

Spinal Ultrasonography, Spinal Dysraphism Occulta, Cauda Equina, Filum Terminale, A Low-lying Conus Medullaris

---

[1]Central Clinical Laboratory Division, National Center for Global Health and Medicine, 1-21-1 Toyama Sinjyuku Tokyo 1628655 JAPAN

[2]Department of Clinical Laboratory, [3]Department of Radiology, National Center for Child Health and [4]Development, 2-10-1 Ookura Setagaya Tokyo 1578535 JAPAN.

Clinical Laboratory, National Sanatorium Kuryu-Rakusenen, 647 Otsu Kusatsu Kusatsu Agatsuma Gunma 3771711 JAPAN

Received on March 18, 2013; Revision accepted on August 10, 2013