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Neonatal Cerebral Investigation

J.M. Rennie, C.F. Hagmann, N.J. Robertson, eds. Cambridge; 2008, 310 pages, 166 line figures, 282 halftones, \$190.00.

In an interestingly titled 310-page book, *Neonatal Cerebral Investigation*, Drs Rennie, Hagmann, and Robertson have edited a multiauthored text (9 contributors, none of whom are radiologists), which covers 3 major areas:

- 1) The physical principles of sonography (US), the principles of electroencephalography (EEG), and the basic principles of MR imaging and MR spectroscopy.

- 2) The normal appearance of the brain (in both the mature and immature neonate) on MR imaging, US, and EEG and 7 different clinical conditions that are addressed with imaging and EEG along with the clinical presentations. Surprisingly, the authors have not considered CT an important technique in neonatal evaluation (this is an omission that is not explained).

- 3) The 7 conditions concern the infant with the following: 1) suspected seizures, 2) depression at birth, 3) a preterm screening (MR imaging, US, and EEG), 4) maternal and neonatal conditions that could result in brain abnormalities, 5) a large head, 6) congenital malformations, and 7) a suspected infection.

The presenting material in this type of clinical setting is highly instructive, and from this reviewer's standpoint, that is the way more texts should be written. The integrations between all clinical and imaging elements give one a fuller flavor of the problems with which a neonatologist and a radiologist are confronted. Take chapter 10, which deals with conditions that can lead to brain imaging abnormalities. Here maternal

conditions such as multiple pregnancies and alcohol/cocaine exposure, which can lead to brain abnormalities (not illustrated), and neonatal conditions such as hypoglycemia, jaundice, congenital heart disease, and Sturge-Weber disease are discussed along with other abnormalities—lenticulostriate vasculopathy and subependymal pseudocysts. In some instances the legends underdescribe (or fail to describe) the abnormalities; for instance in an infant with hypoglycemia, the legends simply mention that there is an apparent diffusion coefficient (ADC) map, a T2 image, and a follow-up MR image. The authors fail to point out what I presume they believe is restricted diffusion in the splenium of the corpus callosum and fail to explain why the findings of the corresponding T2-weighted image are normal in the splenium and what the 44-day follow-up shows. In that same chapter, while there is a full description of neonatal jaundice (pathophysiology, clinical presentation, neuropathology, and basis of neurotoxicity), surprisingly there is no MR imaging of either acute or chronic bilirubin-induced neurologic dysfunction. Such images could have imbedded in the reader's mind the areas of the brain affected. These are minor complaints, as is the fact that when the authors want to display restricted diffusion, most frequently they illustrate just the ADC map and not the accompanying diffusion-weighted images.

These considerations are minor when the book as a whole is evaluated. In summary, it would be a very valuable addition to the library of any neuroradiologist who deals in significant pediatric imaging. The book nicely ties together multiple issues involved in pediatric brain abnormalities and does so within a clinical framework. Of course, it would also be of great benefit to any pediatric neurologist.

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