meningitis and positive CSF culture. Except for one study, LPs were not routine for investigation of infection, and were obtained in only 60% of those with positive blood culture. Almost one third of neonates with sepsis had coexisting meningitis.

Late onset meningitis is associated with predominantly Gram negative organisms. The incidence of viral and fungal (*Candida albicans)* organisms is higher in late onset compared to early onset infection. Group B streptococcal infection presenting late is more likely to be associated with meningitis.

Low rates of LP were attributed to perceived adverse effects of the procedure, the babies being considered "too sick to tap." In the studies reviewed, LP was not associated with complications (risk of trauma, infection, spinal epidermoid tumor, brain stem herniation, or hypoxic stress). The risk of death was 23% in infants with meningitis versus 9% in those with LP and no meningitis. The rate of positive CSF cultures among patients with LP was not significantly different across centers. The importance of a repeat LP to determine effectiveness of treatment is emphasized by the finding of 10 of 90 repeat cultures being positive for the same organism. (Malbon K, Mohan R, Nicholi R. Should a neonate with possible late onset infection always have a lumbar puncture? **Arch Dis Child** January 2006;91:75-76). (K Malbon, Neonatal Unit, Northwick Park Hospital, Harrow HA1 3UJ, UK).

COMMENT. The authors conclude that lumbar puncture should be considered as part of the routine investigation of late onset infection (after 48 hours) in neonates. LP performed in 30 to 90 infants (depending on the patient population) during investigation for serious bacterial illness would detect one case of meningitis.

NEUROCUTANEOUS SYNDROMES

LINEAR SCLERODERMA AND NEUROLOGICAL COMPLICATIONS

Three patients with linear scleroderma *en coup de sabre* who presented with neurologic abnormalities before or concurrent with the dermatologic diagnosis are reported from the Medical College of Wisconsin, Milwaukee, WI. Case 1, a 5-year-old girl presented with partial complex seizures and a linear plaque with alopecia from the left eyebrow to the scalp. The EEG showed focal epileptiform discharges in the left posterotemporal area. Despite treatment with topical corticosteroids, the skin lesions first spread to form indurated plaques, and stabilized after 18 months. Seizures responded to antiepileptic drugs (AED), and treatment was tapered after 4 years. The child was seizure-free for 8 years, and AED were restarted at age 14, after a generalized seizure recurrence. Repeat MRIs were normal. Skin lesions consisted of hyperpigmentation and linear depressed plaques over the forehead. Case 2, a 6-year-old boy presented with right facial palsy, and headaches. Annular, erythematous areas of alopecia appeared on the right parietal scalp several months later. MRI was normal. Neurologic and skin lesions stabilized after treatment with prednisolone and methotrexate. Case 3, a 5 year-old girl presented with a white patch in the midline of her forehead, and 2 months later, she had a seizure. Uncontrolled partial complex seizures followed. Video-EEG showed a left frontal-temporal focus, a repeat MRI showed a T2 signal in the left subcortical white matter, CT revealed frontal calcifications and encephalomalacia, and PET scan had hypometabolic areas in the left frontal lobe. Resection of the left frontal area showed

lymphocytic inflammation and focal vasculitis, secondary to linear scleroderma en coup de sabre. She was treated with methotrexate, and had no recurrence of seizures. (Holland KE, Steffes B, Nocton JJ, et al. Linear scleroderma en coup de sabre with associated neurologic abnormalities. **Pediatrics** January 2006;117:132-136). (Respond: Kristen E Holland MD, Department of Dermatology, 920-0 W Wisconsin Ave, Milwaukee, WI 53226).

COMMENT. Examination of the skin and scalp is important in children with unexplained partial complex seizures or other neurologic findings. A list of neurologic abnormalities associated with linear scleroderma *en coup de sabre* includes hemiparesis, peripheral facial palsy, oculomotor nerve palsy, ptosis, tongue atrophy, trigeminal neuralgia, intracranial aneurysm, subdural hygroma, and headaches. Neurologic complications usually follow the skin lesions by months or sometimes, years. The etiology is usually unknown, but the vasculitis has been attributed to infection (*Borrelia burgdorferi* in Japan and Europe), trauma, and genetic factors. Linear scleroderma is a self-limited disease, but reactivation can occur, and complete resolution is uncommon.

CNS NEOPLASMS

CNS MENINGIOMAS IN CHILDREN AND ADOLESCENTS

A clinicopathological analysis of 87 cases of meningioma in children and adolescents age 5 months to 20 years (mean 14 years) is reported from the Armed Forces Institute of Pathology, Walter Reed Army Medical Center, Children's National Medical Center, George Washington University, Washington, DC; Uniformed University of Health Sciences, Bethesda, MD; and Catholic University of Korea, Seoul. Males outnumbered females, 52 to 35. Presenting symptoms were seizures in 33%, headaches (13%), ataxia (10%), and hemiparesis (10%). Neurofibromatosis type 2 was present in 9 patients and Gorlin syndrome (multiple basal cell carcinoma syndrome, a familial autosomal-dominant inheritance) in 2. Tumors were supratentorial in 64%, infratentorial in 16%, intraventricular in 12%, and spinal in 8%. Total resection was performed in 53 (62%) patients, and subtotal resection in 28 (33%). Seven had received radiotherapy. Recurrences occurred in 12. Meningiomas were WHO Grade I in 62 (71%), Grade II in 21 (24%), and Grade III in 4 (5%). At a median follow-up of 68.5 months in 62 patients, 7 (11.3%) had died. Recurrence-free survival time was significantly related to WHO grade (33% of Grade III cases survived 10 years cf 70% and 92% for Grade I and II cases; p=0.002). Except for weak evidence of a higher risk in Grade III tumors (50% with 5 year survival cf to 97% and 100% for Grade I and II, respectively), overall survival time was not significantly linked to WHO grade or other prognostic factor (p=0.06). (Rushing EJ, Olsen C, Mena H, et al. Central nervous system meningiomas in the first two decades of life: a clinicopathological analysis of 87 patients. **J Neurosurg (6 Suppl Pediatrics)** Dec 2005;103:489-495). (Reprints: Elisabeth J Rushing MD, Department of Neuropathology, Armed Forces Institute of Pathology, Washington, DC 20306).

COMMENT. Close surveillance is advisable in children who have undergone radiotherapy or have a genetic predisposition to meningioma. Childhood meningiomas account for less than 3% of primary CNS tumors.