

- 34 Faria MA, Spector RH, Tindall GT. Downbeat nystagmus as the salient manifestation of the Arnold-Chiari malformation. *Surg Neurol* 1980;13:333-6.
- 35 Thrush DC, Foster JB. An analysis of nystagmus in 100 consecutive patients with syringomyelia. *J Neurol Sci* 1975;20:381-6.
- 36 Pederson RA, Troost T, Abel L, Zorub D. Intermittent downbeat nystagmus and oculocephalic reflexes reversed by sub-occipital craniectomy. *Neurology* 1984;30(11):1239-42.
- 37 Hadj-Djilani M, Zander E. Follow up of 12 cases of cervicobulbar communicating syringohydromyelia 6-12 years after surgery. *Neurochirurgie* 1980;26:129-34.
- 38 Chung HD, DeMello DE, D'Souza N, Estrada J. Infantile syringobulbia. *Neurology* 1982;32:441-4.
- 39 Williams B. A critical appraisal of posterior fossa surgery for communicating syringomyelia. *Brain* 1978;101:223-50.
- 40 Roig C, Lopez-Pouza S, Ferrer I. Bleeding in syringobulbia. *Eur Neurol* 1982;21:189-93.
- 41 Ratcheson RA, Wirth FP, Cholu LI, Van Buren JM. Syringobulbia—prolonged survival. *Acta Neurochir (Wein)* 1971;24:169-77.
- 42 Taylor J, Greenfield JG, Martin JP. Two cases of syringomyelia and syringobulbia observed clinically over many years and examined pathologically. *Brain* 1922;45:323-56.
- 43 Kruse A, Rassmussen G, Børgesen SE. CSF dynamics in syringomyelia: intracranial pressure and resistance to outflow. *Br J Neurosurg* 1987;1:477-84.
- 44 Staudenmaier C, Buncie JR. Periodic alternating gaze deviation with dissociated face turn. *Arch Ophthalmol* 1983;101:202-5.
- 45 Matsumoto T, Symon L. Surgical management of syringomyelia—current results. *Surg Neurol* 1989;32:258-65.
- 46 Sherman JL, Citrin CM, Barkovich AJ. MR Imaging of syringobulbia. *J Comp Assist Tomography* 1987;11:407-11.

The signs of Kernig and Brudzinski

"I have observed for a number of years in cases of meningitis a symptom which is apparently rarely recognised although it is, in my opinion, of significant practical value. I am referring to the occurrence of flexion contractures in the legs or occasionally also in the arms which become evident only after the patient sits up.

Disregarding for a moment the infrequent cases of acute meningitis without contractures (particularly purulent secondary meningitis), one may find, as is well known, in the vast majority of cases of tuberculous and epidemic spinal meningitis the classic more or less prominent stiffness of the neck and back. Only in some of these patients while they are lying supine, may contractures of the extremity muscles be noted . . . If one has the patient sit up on the edge of the bed, his legs dangling . . . the stiffness of the neck and back will ordinarily become much more severe and only now will a flexion contracture occur in the knee and occasionally also in the elbow joints. If one attempts to extend the patient's knees one will succeed only to an angle of approximately 135°. In cases in which this phenomenon is very pronounced, the angle may even remain at 90°."

Vladimir Mihailovich Kernig (1840-1917) first brought these observations to the medical public at a meeting of physicians in St Petersburg in 1882. On 29 December 1884 his work was published.¹ Born in Lepaia, Latvia, Kernig graduated in 1864, receiving a doctorate one year later. He obtained a post at the

Obuhovsk Hospital in St Petersburg, reaching the highest professional rank and continued his work until his retirement in 1911. Kernig's account followed one year after that of the often confused Lasègue's sign described in his thesis by Lasègue's pupil J-J Forst in 1881.²

Józef Brudzinski (1874-1917) was a Polish paediatrician. Dean of the University of Warsaw, he described several signs, but the one known in meningeal irritation was published in 1909.³

"I have noted a new sign in cases of meningitis: passive flexion of the neck causes the lower extremities to flex at the knees and the pelvis . . . The technique of examination is very simple. With the child in the supine position, the examiner flexes the neck of the child with the left hand while resting his right hand on the patient's chest to prevent it from rising. This examination is generally not difficult except in the very young who because of restlessness may not be able to maintain the lower extremities in extension. In such a case, the examiner should gently restrain the legs at the knees. To prevent errors, it is important to do repeated examinations."

JMS PEARCE

1 Kernig W. Ueber ein wenig bemerktes Meningitis-Symptom. *Berlin Klin Wschr* 1884;21:829-32.

2 Pearce JMS. *J Neurol Neurosurg Psychiatry* 1988;51:1157.

3 Brudzinski J. Un signe nouveau sur les membres inférieurs dans les méningites chez les enfants (signe de la nuque). *Arch med Enf* 1909;12:745-52.