

Nonterminal Myelocystoceles: A Prospective Study.

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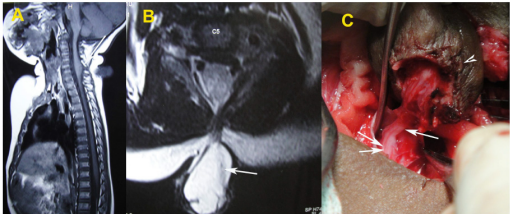
Introduction

The aim of this study is to analyze the clinical presentation, radiological findings, surgical treatment and outcome of nonterminal myelocystoceles (NTM)treated by this author.

Methods

Between 1998 and 2010, 20 patients with NTMs were treated by this author. All children underwent neurological evaluation and MRI evaluation. Surgical findings were recorded. The aim of surgery was to detether the cord and achieve watertight dural closure after sectioning the fibrvascular stalk in type I lesions ; detethering, syrinx drainage and watertight dural closure in type II lesions. Follow up ranged from 3 months – 2 years.

Figure 1- Type I Non terminal myelocystocele - cervical



A) Sagittal T 1 weighted MRI sequence showing the tenting of the cord (arrow) at the level of the lesion, B)Axial T2 weighted MRI sequence showing the fibroneurovascular stalk (arrow) passing into the sac, C)Intraoperative photographs showing the fibroneurovascular stalk (arrow) and its attachment to the cord (double arrows); arrow head points to the sac.

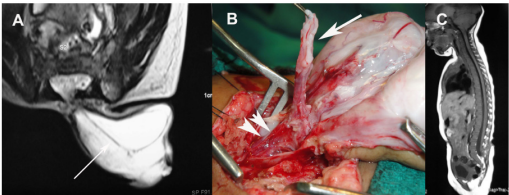
Results

Age: ranged from newborn to 3 years. Female: male ratio was 9:1. Lesion locations were as follows: Cervical :6, Thoracic 6, Lumbar 8. All children except one were normal neurologically. Radiologically, 2 children had Rossi Type II NTMs and the remaining 18 had Rossi Type I NTMs. No patient with lumbar NTM had Type II lesion. All children with lumbar NTMs had lowlying cords. Radiologically, type I lesions were characterized by posterior tenting of the cord at the site of the lesion. One patient had associated hydrocephalus. Six of the eight lumbar NTMs had radiological evidence of tonsillar herniation. No patient had postoperative CSF leak and there was no retethering during an average follow up of 9 months.

Conclusions

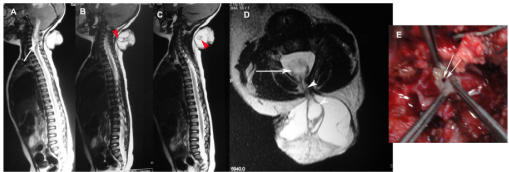
NTMs are not rare lesions. They are often misdiagnosed as meningoceles. Improper diagnosis may lead to suboptimal treatment without adequately untethering the cord. Failure to recognize the pathology of NTMs leads to delayed deterioration because of tethering. Proper recognition and appropriate surgical technique leads to good outcome. NTMs are under diagnosed lesions. Awareness of the radiological presentation is the key to diagnosis.

Figure 2- Type I Non terminal myelocystocele - Lumbar



A)Axial T 2 weighted MRI sequence showing the fibroneurovascular stalk (arrow) passing into the sac;B)Intraoperative photograph showing the fibroneurovascular stalk (arrow) detached from the sac but still attached to the cord (arrow heads)C)Postoperative Sagittal T 1 weighted sequence.

Figure 3 - Type II Non terminal myelocystocele - Cervical

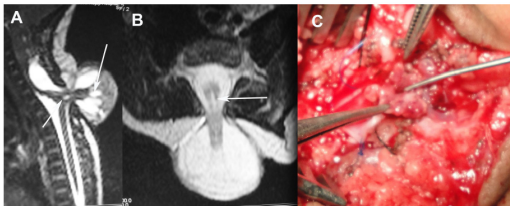


A),B),C):Sagittal T 2 weighted sequences showing in A) the fourth ventricle communicating with the cervical syrinx (arrow)and in B) and C) arrowheads pointing to the CSF inside the fibroneurovascular stalk; D) Axial T 2 weighted sequence showing the syrinx in the cervical spinal cord (arrow) and the CSF (arrow heads) in the fibroneurovascular stalk; E) intraoperative photograph showing the lumen in the fibroneurovascular stalk (double arrows point to the lumen)

Learning Objectives

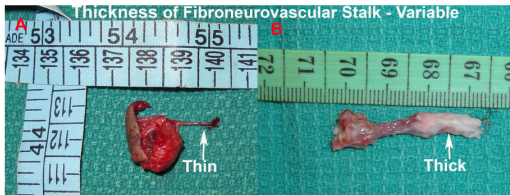
By the conclusion of this session, participants should be able to :1) diagnose non terminal myelocystoceles, 2) differentiate the two types of non terminal myelocystoceles, 3)Understand the differences in the surgical management of non terminal myelocystoceles, 4) understand the difference between non terminal myelocystoceles and meningoceles with whom they are commonly confused.

Figure 4- Type II non terminal myelocystocele - cervical



A)Sagittal T 2 weighted sequence showing the syrinx (arrow)communicating with the CSF (arrow) in the stalk; B) Axial T 2 weighted sequence showing the syrinx (arrow) extending into the fibroneurovascular stalk; C) Intraoperative photograph showing the lumen in the stalk (probe points to the lumen)

Figure 5



The thickness of the fibroneurovascular stalk is variable. It can be very thin as shown in A) or it may be very thick as shown in B)