

On-line Table 1: CMs and associated anomalies

Type of CM	Brain	Spine and Spinal Cord	Meninges
1	Cerebellar tonsillar herniation; obex herniation – CM 1.5; effacement of prepontine and retrotonsillar cisterns; rarely hydrocephalus	Syringohydromyelia; craniovertebral junction anomalies; platybasia; retroflexed odontoid process; atlanto-occipital assimilation; basilar invagination; scoliosis; vertebral segmentation and fusion anomalies	Arachnoid adhesions; sloped tentorium cerebelli; vertical straight sinus
2	Cerebellar tonsillar herniation; cerebellum wrapping around the brain stem; medullary kink; collicular fusion and tectal beaking; enlarged massa intermedia; corpus callosal agenesis with or without callosal lipoma; colpocephaly and hydrocephalus; absence of septum pellucidum; cranial nerve hypoplasia or aplasia; disorders of cortical formation; polymicrogyria; subependymal nodular heterotopia; abnormalities of the skull; luckenschadel; scalloped clivus and petrous temporal bone	Open spinal dysraphism; lumbar myelomeningocele; tethered cord; lipomyelomeningocele; diastematomyelia; craniovertebral junction anomalies; platybasia; retroflexed odontoid process; atlanto-occipital assimilation; basilar invagination; scoliosis; vertebral segmentation and fusion anomalies; omohyoid vertebra–Klippel Feil syndrome	Hypoplastic and/or fenestrated falx; interdigitating gyri
3	Low occipital and/or high cervical encephalocele; herniation of the straight sinus and/or torcula; rest of the findings are similar to CM-2	High cervical encephalocele; vertebral defects in the posterior arch of the cervical spine	Hypoplastic and/or fenestrated falx; interdigitating gyri

On-line Table 2: MR imaging protocol for evaluation of the brain and spine in CMs

Morphologic evaluation of the brain
T1 SE (Spin Echo) 3D T1
T2 TSE, axial plane
DWI, axial plane (optional)
SWI, axial plane (optional)
Morphologic evaluation of the spine and spinal cord
T1 and T2 TSE, sagittal images of the whole spine
T2 TSE, axial plane
T1 TSE, coronal plane: to assess vertebral segmentation and fusion anomalies
Advanced imaging sequences
Phase-contrast CSF flow studies, to assess CSF flow dynamics
Electrocardiogram and/or pulse-gated study
Midsagittal and axial plane through the foramen magnum
Velocity-encoding gradient, from 5 to 15 cm/s
DTI (optional), to assess microstructural alterations in the brain stem
Axial or sagittal plane
30 directions
Cine MR imaging (optional), to assess cerebellar tonsillar and brain stem motion
True FISP technique
Electrocardiogram and/or pulse-gated study
Sagittal plane



ON-LINE FIG 1. Spontaneous resolution of CM-1. Sagittal T2WI of the cervical spine. *A*, The initial MR image shows cerebellar tonsillar herniation below the foramen magnum, with downward migration of the obex (*arrowhead*). *B*, Spontaneous resolution on follow-up imaging, along with prominent central canal in the initial and follow-up scans (*arrow*).



ON-LINE FIG 2. CM-1 (patient in Figs 1 and 5) after suboccipital craniectomy. *A*, Sagittal T2WI of the cervical and upper thoracic spine shows suboccipital craniectomy changes and CSF posterior to the cerebellum, with a reduction of the syringohydromyelia. Axial T2WIs of the brain (*B*) and spine (*C* and *D*) show adequate decompression of the posterior fossa after the suboccipital craniectomy (*arrowheads*) and interval reduction of the syringohydromyelia (*arrows*).