

| On-line Table: Clinical and imaging findings of hemangioma with CNS extension |                            |                                                                  |                                                                                                              |                                                                                                     |                                                                                                   |                                  |                                                                                                                     |                  |                                                                       |
|-------------------------------------------------------------------------------|----------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------|
| No.*                                                                          | Sex/Age at Initial Imaging | Presenting Signs, Symptoms                                       | Imaging Findings                                                                                             | Extra-CNS Site, Superficial to CNS site.                                                            | CNS Site                                                                                          | Continuity                       | Associated Findings                                                                                                 | Pathology-Proven | Tumoral Volume after Treatment                                        |
| 1                                                                             | F, 3w                      | CHF                                                              | Iso- on T1, hyper- on T2; homogeneous avid C+; flow voids                                                    | L perimastoid soft tissues                                                                          | Quad plate cistern, pineal region, L CPA                                                          | Not clearly seen                 | Hydrocephalus, L CPA cerebral AVM                                                                                   | No               | Corticosteroid<br>Decrease                                            |
| 2                                                                             | F, 9w                      | L cheek lesion, L periorbital swelling                           | CT only; dense, heterogeneous C+, bowing of L cavernous sinus without thrombosis or parenchymal displacement | L zygomatic fossa, L pre-orbital/ orbital soft tissues, L parotid                                   | L cav. sinus/L Meckel cistern/preoptine cistern/L IAC                                             | L superior orbital fissure       | Tortuous vessels adjacent to ipsilateral ICA terminus                                                               | No               | Corticosteroid<br>Lost to follow-up                                   |
| 3                                                                             | F, 4m                      | Scalp bleeding, anemia                                           | Iso- on T1, T2; flow voids; homogeneous, avid C+                                                             | L parieto-temp. scalp; L PPF; nasopharynx; L parapharyngeal; L carotid spaces; L post. triangle     | Torcula/L transverse sinus/L UV/fourth ventricle; L foramen of Luschka, L IAC, L CPA              | Foramen rotundum                 | Hydrocephalus, thrombosis of R transverse sinus                                                                     | No               | Corticosteroid<br>Decrease                                            |
| 4                                                                             | F, 3m                      | L facial lesion, ptosis                                          | CT only; lobulated, homogeneous C+                                                                           | L forehead/L periorbital soft tissues/L orbit                                                       | Fourth ventricle, L foramen of Luschka, quad plate cistern                                        | L inferior orbital fissure       | Ipsilateral cerebellar hypoplasia                                                                                   | No               | IFN, OK-432 subsequent corticosteroid<br>Decrease                     |
| 5                                                                             | F, 7w                      | R facial lesion, proptosis                                       | Slightly hyper- on T1, T2; flow voids, homogeneous C+                                                        | R parietal soft tissues                                                                             | R temp. fossa; R cav. sinus; R Meckel cave; sella; R preoptine; R ambient and quad plate cisterns | R superior orbital fissure       | None                                                                                                                | No               | Corticosteroid<br>Decrease                                            |
| 6                                                                             | M, 7w                      | Ulcerating R facial/ occipital lesion                            | Iso- on T1, hyper- on T2; avid C+, flow voids                                                                | R face, neck; occiput, posterior auricular soft tissues                                             | Fourth ventricle, R foramen of Luschka, R IAC                                                     | R hypoglossal canal              | HELP/toxemia in mother, subependymal cysts                                                                          | No               | Corticosteroid<br>Decrease                                            |
| 7                                                                             | M, 3w                      | R facial stain                                                   | Iso- on T1, T2; avid C+, flow voids                                                                          | R parotid, parapharyngeal, posterior triangle; preauricular, intraoral orbit                        | R CPA, R foramen of Luschka, fourth ventricle                                                     | None seen                        | R ICA hypoplastic or aplastic, PHACES                                                                               | No               | Corticosteroid with minimal response, then IFN<br>Decrease with IFN   |
| 8                                                                             | F, infancy                 | Extensive cervicofacial hemangioma                               | Iso- to hypo- on T1, hyper- on T2; avid C+, flow voids                                                       | L per-orbital/orbital with ulceration, bilateral periauricular, parotid                             | Peri-mesencephalic cistern, sella, cavernous sinus, L CPA                                         | L superior orbital fissure       | Tetralogy of Fallot, Dandy-Walker malformation                                                                      | No               | Corticosteroid, IFN<br>Decrease                                       |
| 9                                                                             | F, 3m                      | R facial stain                                                   | Iso- on T1, slightly hyper- on T2; homogeneous C+, flow voids                                                | R orbit, in trachea, within mediastinum                                                             | R cavernous sinus, R CPA, cervical extradural                                                     | Not seen                         | PHACES with stroke, hypoplasia of ipsilateral cerebellum, diffuse GI hemangiomatosis, hydrocephalus, PROM in mother | No               | Corticosteroid<br>Decrease                                            |
| 10                                                                            | F, 6m                      | Lumbosacral skin lesions                                         | Hypo- on T1, iso- on T2; avid C+, flow voids                                                                 | Paraspinal soft tissues overlying L spine                                                           | L4/L5 extradural                                                                                  | L of midline                     | Associated lipoma                                                                                                   | Yes              | Laser, resection<br>Decrease                                          |
| 11                                                                            | M, 10m                     | Perianal lesion                                                  | Iso- on T1, hyper- on T2; flow voids, heterogeneous C+                                                       | Lumbar soft tissues                                                                                 | Extradural lumbar spine                                                                           | Not clearly shown                | None                                                                                                                | No               | Corticosteroid<br>No change                                           |
| 12                                                                            | F, 6m                      | Thoracic paraspinal, anterior neck lesion                        | Hyper- on T2, homogeneous C+, flow voids                                                                     | Paraspinal thoracic soft tissues                                                                    | Extradural thoracic spine                                                                         | Not seen                         | Neck lesion causing tracheal compression                                                                            | No               | Corticosteroid<br>Lost to follow-up                                   |
| 13                                                                            | M, 9m                      | Superficial lumbar lesion                                        | Heterogeneous on T1, T2; avidly enhancing, flow voids                                                        | Paraspinal lumbar soft tissues                                                                      | Extradural lumbar spine                                                                           | None seen                        | Associated intramedullary angiolipectibroma, tethered cord                                                          | Yes              | Surgical debulking<br>Small amount of residual hemangioma<br>Decrease |
| 14                                                                            | F, 4m                      | Superficial thoracic lesion                                      | Iso- on T1, hyper- on T2; avid C+, flow voids, lobular enhancement on CT                                     | Paraspinal thoracic soft tissues, prespinal space                                                   | Extradural thoracic spine                                                                         | Present                          | Tethered cord                                                                                                       | No               | Corticosteroid<br>Decrease                                            |
| 15                                                                            | F, 2m                      | Hemangiomas on 50% of body, including ulcerated perianal lesions | Iso- to hypo- on T1, hyper- on T2; avid C+, flow voids                                                       | Occipital scalp, bilateral masticator space, L parotid, bilateral extrapleural apical masses, liver | Extradural thoracic spine, lumbosacral spine                                                      | Present, through neural foramina | Pulmonary upper lobe atelectasis                                                                                    | No               | Corticosteroid<br>Awaiting follow-up                                  |

**Note:**—w indicates weeks; m, months; cav, cavernous; Quad, quadrigeminal; temp, temporal; GI, gastrointestinal; PPF, pterygopalatine fossa; C+, contrast enhancement; LV, internal jugular vein; IAC, internal auditory canal; IFN, interferon; OK-432, picibanil sclerotherapy; CHF, congestive heart failure; HELP, hemolytic anemia, elevated liver enzymes, and low platelet count; PROM, premature rupture of membranes; post, posterior; R, right; L, left; iso-, isointense; hypo-, hypointense; hyper-, hyperintense; CPA, cerebellopontine angle cistern; CNS, central nervous system; AVM, arteriovenous malformation; ICA, internal carotid artery.

\* Patients 1–8, intracranial hemangioma; 9, intracranial and intraspinal hemangioma; 10–15, intraspinal hemangioma.