Foramen Magnum: Anatomy and Various Pathologies: A Pictorial Essay

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Purpose
The foramen magnum is a large opening in the occipital bone through which the cranial cavity communicates with the vertebral canal. The foramen magnum transmits the medulla and its meninges, the spinal segment of the CN XI (hypoglossal nerve), the two vertebral arteries, and the anterior and posterior spinal arteries and vertebral veins. The bony elements that contain these structures are occiput and the C1 and C2 vertebrae. Foramen magnum is affected by acute or chronic lesions. Medulla oblongata and upper cervical cord may be affected easily by foramen magnum lesions and fetal sequelae may result. Foramen magnum lesions can be missed due to artifact on brain MR imaging and CT and low attention of the radiologist. Recognition and familiarity with the foramen magnum lesions are very important to radiologist inorder to make an early diagnosis. The purpose of this study is to illustrate the structural anatomy consisting of the foramen magnum and the various pathologies affecting the foramen magnum.

Materials & Methods
We retrospectively reviewed our experience with various pathologies affecting the foramen magnum.

Results
We divided foramen magnum lesions into three segment: intraaxial(cervicomedullary), extramedullary intradural, and extradural lesions. We present the characteristic radiologic features of various foramen magnum lesions: intraaxial lesions (syringohydromyelia, vascular malformation of the medulla oblongata, infarction, olivopontocerebellar degeneration, marked atrophic change of the cervical cord in achondroplasia patient); extramedullary intradural lesions (vertebrobasilar dolichoectasia, acquired tonsilar herniation caused by cerebellar lesions, inferior extension of the forth ventricle mass, meningioma); extradural lesions (clival lesion, odontoid fracture, platybasia, atlantooccipital assimilation).

Conclusion
This study discusses the characteristic features of various foramen magnum pathologies. Familiarity with foramen magnum lesions is very important to the radiologist in order to make an early diagnosis.