



Clinical Report

Occipital Dysplasia in Pomeranian Dog

Mohamad Molazem¹, Dariush Shirani², Hanie Farahi², Yasamin Vali¹,
Shima Ahadinejad³, Hosein Antikchy⁴

Abstract

Case Description- Three female Pomeranian dogs with mean age about 1-year-old and history of seizure and sudden shock were referred to Small Animal Hospital of University of Tehran.

Clinical Finding- Occipital Dysplasia was diagnosed by radiographic findings in rostradorsal-coudoventral oblique view in all cases.

Treatment and Outcome- These dogs recovered by 14 days administration of Glucocorticoid anti-inflammatory drug and Vit B₁ (300 mg/BW).

Clinical Relevance- Diagnosis and treatment of the abnormality in this paper can show a good direction toward same problems, that clinicians may encounter them.

Key Words: Occipital Dysplasia, Pomeranian, Foramen Magnum

Case Description

Three female Pomeranian dogs with mean age about 1-year-old and mean body weight about 1.800 kg unconscious and hypothermic with seizure, tetra paresis, arrhythmia, dyspnea, bruises tongue, in the hypovolemic shock situation and paralysis of neck with the history of sudden movement were referred to Small Animal Hospital of University of Tehran. They had the history of the neck paralysis and nervous tic eventually that had been treated, spontaneously.

After referring to the hospital, clinical and laboratory examination were performed; chest and abdomen radiography were taken in lateral and VD view; rostradorsal- coudoventral oblique projection of the skull was also taken by placing the dog in dorsal recumbency with the neck flexed so that the nose was angled toward the sternum. The central x-ray beam was directed between the eyes and exits through the foramen magnum. The

beam was angled 25 to 40 degrees from the vertical axis.[^]

Treatment, Outcome and Discussion

In the laboratory examination, all factors were within normal limits. No abnormal Rontgen signs were seen in chest and abdominal radiographs. The skull radiography showed that the foramen magnums were expanded and became like “key-hole” notch which is a diagnostic feature for occipital dysplasia in all 3 cases (Fig.1).



Figure1. Rostradorsal-caudoventral oblique radiograph of the skull; arrows indicate the dorsally extended of the foramen magnum (key hole notch).

¹Department of Veterinary Surgery and Radiology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran.

²Department of Internal Medicine, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran.

³Senior Students of Veterinary Medicine, University of Tehran, Tehran, Iran.

⁴Graduated from Azad University with a degree in Veterinary Medicine, Azad University, Garmsar branch, Iran

Address all correspondence to Dr. Mohammad Molazem (DVM, DVSc), E-mail: mmolazem@ut.ac.ir

Tablet Prednisolon 5mgv(1mg/kg ,po, q 24h initially then taper to q 48h) and tablet VitB1 100mg (100 mg/dog/day , po, q 24h) were prescribed for 20 days, fluid therapy was also done for 3 days. After 3days the dogs became better and started eating, after 6 days they could stand up, after 9 days started to walk and after 14 days complete recovery occurred in all cases.

Chiari-like malformation signs are associated with abnormal conformation of the foramen magnum and cerebellar vermis.¹ Expansion of the foramen magnum, which is a ring-like hole in the occipital bone and serves as a passage way between the spine and the head, produces occipital dysplasia.^{2,3} It happens as a result of developmental defect in the occipital bone.⁴

Occipital dysplasia, a rare congenital malformation consists of an elongation in the caudal and ventral part of the cerebellum through the foramen magnum which in addition to compressing the medulla, the herniated cerebellum is forced caudally generating pulsatile compression of the cervical spine. This may lead to syringomyelia of the cervical spinal cord.¹ The clinical signs include cervical myelopathy symptoms, ataxia, proprioception deficits, weakness, cervical pain, seizures and distinct changes in personality. Excessive scratching of the ear, neck or shoulders may be the major presenting complaint.¹⁻³ This disorder is usually identified in miniature and toy breed dogs and may be present at birth or may develop within 4 years.^{2,3,5-7}

Foramen magnum size and shape can be evaluated in the rostradorsal-caudoventral oblique skull radiograph. The characteristics of the foramen magnum can be assessed by CT and MRI too.^{1,8}

Watson (1989) examined the shape of the foramen magnum in 36 dogs and found a considerable variation in the shape of the foramen magnum even within the same breed, the more brachycephalic the skull, the more likely there was occipital dysplasia.⁹ In Brachycephalic dogs the overall shape and size of the caudal fossa of the foramen magnum are variable and may not show any neurologic signs.⁹⁻¹² However in the present case, occipital dysplasia had caused to clinical signs. In contrast, occipital hypoplasia results in reduced volume of the caudal fossa, leading to overcrowding of the neural structures and the most common cause of syringomyelia in veterinary medicine is occipital hypoplasia which is inherited in the Cavalier king Charles spaniel.^{9,13}

The coexistence of occipital dysplasia and occipital hypoplasia and syringomyelia and hydrocephalus in toy dogs was reported in some articles.^{9,14} Due to lack of MRI examination, hydrocephalus was not detectable in this case and we do not know about the existence of syringomyelia either.

Acknowledgment:

The authors would like to acknowledge Tehran Azma Veterinary Diagnostic Center and its staff for technical supports and assistance.

References

1. Bagley RS, Neurologic disease. In: Ettinger, Stephen J, Edward C. Feldman. Textbook of veterinary internal medicine. 7th ed. Philadelphia: WB Saunders, 2010:1395-1430.
2. Bagley RS, Harrington ML, Tucker RL, Sande RD, Root CR, Kramer RW. Occipital dysplasia and associated cranial spinal cord abnormalities in two dogs. *Vet Rad & Ultrasound* 1996; 37:359-362
3. Simoens P, Poels P, Vyt P, Lauwers, H. Foramen Magnum Variability and Occipital Dysplasia in the Dog. *Vlaams Diergeneeskundig Tijdschrift*. 1994; 63:44-53
4. Watson AG, de Lahunta A, Evans HE. Dorsal notch of foramen magnum due to incomplete ossification of supraoccipital bone in dogs, *J Small Anim Pract* 1986; 30:666-673
5. Bardens JW. Congenital malformation of the foramen magnum in dogs, *SW Vet*. 1965;18:295,
6. Kelly JH. Occipital dysplasia and hydrocephalus in toy poodle, *Vet Med Anim Clin* 1975;70:940-941.
7. Parker AJ, Park RD. Occipital dysplasia in the dog, *J Am Anim Hosp Assoc* 1974;10:520.
8. Forrest LJ. Congenital anomalies In: Thrall DE. Textbook of Veterinary Diagnostic Radiology, 4th ed. *Elsevier Health Sciences* 2013; 115-116.
9. Rusbridge C, Knowler SP. Coexistence of occipital dysplasia and occipital hypoplasia/syringomyelia in the cavalier King Charles spaniel, *J Small Anim Pract* 2006;10:603-606
10. Watson AG. The phylogeny and development of occipito-atlas-axis complex in the dog, Cornell University 1981.
11. Wright JA. A study of the radiographic anatomy of the foramen magnum in dogs, *J Small Anim Pract* 1979; 20:501-508.
12. Simoens P, Poels P, Lauwers H. Morphometric analysis of the foramen magnum in Pekingese dogs, *Am J Vet Res* 1994; 55:34-39.
13. Rusbridge C, Knowler P, Rouleau GA, Minassian BA, Rothuizen J. Inherited Occipital Hypoplasia/Syringomyelia In The Cavalier King Charles Spaniel: Experiences in Setting Up A Worldwide DNA Collection, *J Hered* 2005; 96:745-749
14. Herpen HV, Voorhout G. Occipital dysplasia in a Pomeranian dog, *Tijdschrift voor diergeneeskunde* 1993; 118:327-328.
15. Janeczek M, Chrószcz A, Pospieszny N. The Occipital Dysplasia In The Papillion Dog, *Elec J Polish Agri Univ*, 2013; 1-3.
16. Bagley RS, Harrington ML, Tucker RL, Sande RD, Root CR, Kramer RW, Occipital Dysplasia And Associated Cranial Spinal Cord Abnormalities In Two Dogs, *Vet Rad & Ultrasound* 1996; 37: 359-362.

گزارش دیسپلازی اوکسیپیتال در سگ پومرانین

محمد ملازم^{۱*}، داریوش شیرانی^۲، هانیه فرهی^۲، یاسمین والی^۱، شیما احدی نژاد^۳، حسین آنتیک چی^۴

^۱بخش رادیولوژی جراحی، دانشکده دامپزشکی دانشگاه تهران، تهران، ایران.
^۲بخش بیماری های داخلی، دانشکده دامپزشکی دانشگاه تهران، تهران، ایران.
^۳دانشجوی سال آخر دکترای عمومی دامپزشکی، دانشکده دامپزشکی دانشگاه تهران.
^۴فارغ التحصیل دکترای عمومی، دانشگاه آزاد اسلامی واحد گرمسار، ایران.

توصیف بیمار - سه قلاده سگ ماده نژاد پومرانین با میانگین سنی ۱ سال با علائم بالینی تشنج و در حالت شوک به بیمارستان دامپزشکی دانشگاه تهران ارجاع داده شدند.
یافته های بالینی - توسط معاینات بالینی و تهیه ی رادیوگراف با حالت گماری Rostro-dorsal-coudoventral به صورت مایل، دیسپلازی اکسیپیتال در هر سه مورد تشخیص داده شد.
درمان و نتیجه - این بیماران تحت درمان با گروه دارویی گلوکوکورتیکوئید و ویتامین ب_۱ (۳۰۰/mg) به مدت ۱۴ روز قرار گرفتند و بهبودی کامل در این موارد حاصل شد.
کاربرد بالینی - تشخیص و درمان عارضه در این مقاله رهیافت خوبی برای کلینیسین های فعال در بخش دام های کوچک در ارتباط با مواجهه با مشکلات مشابه ایجاد می نماید.
کلید واژگان - دیسپلازی اکسیپیتال، پامرین، سوراخ مگنوم.

