Swimmer puppy syndrome diagnosis and clinical management

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DOI: https://doi.org/10.22271/veterinary.2024.v9.i4.e.1558

Abstract
Swimmer puppy syndrome, or flat puppy syndrome, is a rare condition affecting neonatal dogs characterized by limb deformities and difficulty standing. This syndrome typically manifests in puppies during their second or third week of life, presenting with hyperextension of joints and a swimming-like motion when attempting to move. Diagnosis involves physical examination and radiographic imaging to assess limb abnormalities, such as patellar luxation. While there is no standardized treatment, early intervention with physiotherapy, including gentle massaging and limb bandaging, has shown promising outcomes. Management also emphasizes environmental adjustments to prevent injury and promote proper development, ensuring a favorable prognosis with timely intervention.

Keywords: Swimmer puppy syndrome, diagnosis, clinical management, puppy health

Introduction
Swimmer puppy syndrome, also called flat puppy syndrome, is an unusual and uncommon deformity affecting neonatal pups. It is characterized by hyperextension of the knee and tarsal joints along with bilateral hip joints, twisted legs, turtle pup, splay leg (paraparesis), splay weak (tetraparesis) and myofibrillar hypoplasia. (Pesha et al., 2001 and Yardimci et al., 2009) The cause is unknown, although scientists suggest it could be genetic, congenital defect during conception, altered neuromuscular synapse function, improper or delayed myelination of peripheral motor neurons, slow muscular development and ventral horn neuropathy. It usually manifests at the age of second or third week of life. Pups unable to stand on their own and remain in sternal recumbency, typically exhibit swimmer-like movements when trying to ambulate in smooth surface. There is no specific treatment protocol for swimmers puppy syndrome. This may be cured automatically by itself when muscle strengthen and the prognosis is good if therapy begins as early as 3 to 4 weeks of age (Hosgood et al., 1998).

Case History and observation
Ten day old male labrador puppy weighing 1.3 kg (Fig.1) and three Rottweiler sibling puppies of 3kg (male), 2.8kg (female), 3kg (female) respectively (Fig.2) were reported to the medicine unit of the veterinary clinical complex, Namakkal during the period from 2021-2023. These puppies were presented with being weak and unable to stand or walk, extended limbs, especially in hind limbs with swimming-like movement on sternal recumbency. Clinical examination identified pronounced external rotation and hyperextension of the hock joints. Neurological examination was normal. The radiographic examination identified bilateral, grade II lateral patellar luxation (Fig.3). The chest radiography was normal.
Physiotherapy was initiated to both the hindlimbs for five minutes, three times daily. Gentle massaging of hock, stifle and hip joints such as passive flexion, extension and adduction and bandaging were also performed (Fig.4). Massaging of the hind limb muscles by using thumb and index finger by gentle pressure was carried out. This therapy was repeated every two hours during the first week. The puppies were recovered uneventfully. Swimmer syndrome is a rare uncommon deformity of neonatal puppies and that has been sporadically reported in puppies (Verhoeven et al., 2006) \(^{5}\) resolved itself while growing except for a few puppies when manifesting at about 3 weeks or 4 weeks. The puppies front and hind legs should be placed to their sides to prevent them from standing and walking properly. It is unusually more prone to slippery or smooth floors when the puppy attempts to move. It is more prevalent in dwarf and smaller breeds. Breed prediction is noticed in English bulldog, Bassett hound and Scottish terrier. It can also affect all kinds of dogs. The cause of swimmer puppy syndrome is unknown but it is suggested to be hereditary or congenital during conception. The other causes may be improper myelination of neurons, poorly developed muscles etc. The clinical signs and symptoms are lethargic, flattened chest, struggle to breathe, unable to eat properly, lesions due to urine and fecal scalding. These pups usually regurgitate milk during drinking. Diagnosis is mainly by physical examination and radiology. Thoracic radiography detected mild flattening of the thorax in all kittens, with normal bone density and absence of cardiac or pulmonary issues, pectus excavatum, sternum abnormalities, osteopetrosis as seen in affected Dachshunds (Riser and Frankhauser, 1970) \(^{4}\), and patellar luxation (Yardimci et al., 2009) \(^{6}\) to differentiate with other condition called pectus excavatum (funnel chest). Hematologic is normal or with mild anaemia and low protein range. There is no specific protocol to treat swimmer puppy syndrome. The treatment mainly depends on the early stage to get a good prognosis. Dumon, (2005) \(^{1}\) stated that treatment for Swimmer syndrome should involve dietary adjustments, moving to a rough surface for motor stimulation, immobilizing the affected limbs anatomically, engaging in physical therapy, undergoing thermal and hydrotherapy and receiving massages to strengthen muscles. Physiotherapy was initiated in the present study. It can be done for every 2 hours for a minimum of 3 weeks. Gentle massage on the hindlimb can be done for 5 mins, 3 times a day. Nutritional support for the puppies should be given with controlled feeding to prevent overweight and regurgitation.

Conclusion
Puppies with swimmer puppy syndrome should not be placed on slippery smooth surfaces. Further, the floor should be free from dust, and urine contamination. Puppies should be allowed to sleep on the side to improve breathing.

Conflict of Interest
Not available

Financial Support
Not available

References

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