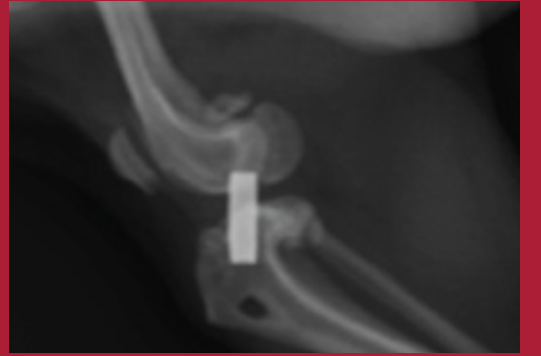


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Case Study Contest



**A Study of Efficacy
and Safety of
PCSO-524®(Antinol®)
in Treatment of Medial
Patellar Luxation and
Cranial Cruciate Ligament
Rupture in a Yorkshire
Terrier Dog**

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Abstract

Male Yorkshire terrier dog aged 7 years weight 2.5 kg suffered from lameness of left Hind limb. Examination found medial patellar luxation of grade 3 and chronic cranial cruciate ligament rupture. PCSO-524® (Antinol®) 100 mg per day, double size of recommended dose for dogs weighed less than 20kg, was prescribed. Examination of lameness score and pain on palpation showed improvement after PCSO-524® (Antinol®) treatment. Radiographic images taken before and after 45 days treatment with PCSO-524® (Antinol®) did not find progress of the lesion. Hematological and biochemistry parameters after 45 days treatment with PCSO-524® (Antinol®) indicated that the medication was safe to use.

Keywords:

Dogs, medial patellar luxation, cranial cruciate ligament rupture, PCSO-524® (Antinol®)

Introduction

Patellar luxation is common in dogs. It is estimated that 66% of dogs under the age of 2 years acquire the disorder. Genetic disorder accounts for 82% of the incidence. Small breed dogs, such as Poodle, Pomeranian, and Yorkshire terrier are most at risk. The most common form is medial patellar luxation, which is identified at 82-92%. The damage caused by luxation includes lameness, pain, impaired limb movement, and most importantly, cranial cruciate ligament rupture that may develop into osteoarthritis or degenerative joint disease (Korakot, 2013). Principle diagnosis is done by patellar palpation. Radiographic examination is only used to evaluate the luxation degree especially 3 and 4 grade, assess the alignment of humerus and tibia, and categorize the osteoarthritis (Korakot, 2013). Treatment of patellar luxation is operation to restore the patella position back to normal position as much as possible. Prognosis is excellent and the treatment success is 90% in case of non-complicated luxation. Medication treatment is unable to eliminate the cause of problems but used to relieve pain and prevent recurrence of the luxation (Korakot, 2013).

PCSO-524® (Antinol®) is extracted from New Zealand Green-lipped mussel that is a popular nutraceutical in humans (Kongwut, 2015). It is used as supplementation for osteoarthritis in dogs to relieve pain and inflammation, replace use of steroids or NSAIDs, which in case of long-term use can cause adverse effects such as peptic ulcer and bleeding disorders. It is reported that 70% of dogs treated with PCSO-524® (Antinol®) for 6 weeks continuously showed improvement of clinical signs. Examination of biological markers for osteoarthritis showed recovery of the disease. Long-term use of the extract for more than 6 months has no adverse effects on animals (Sirintorn, 2012). The extract is in the form of capsule, each consists of 50 mg oil extracted from New Zealand Green-lipped mussel (*Perna canaliculus*), 0.225 mg vitamin E, olive oil, gelatin, and glycerin (Soontornvipart, 2015). The recommended dosage is 1 capsule per day for dogs under 20 kg (Sirintorn, 2012).

Case history

Male Yorkshire terrier dog aged 7 years weight 2.5 kg had a history of operation for medial patella luxation and cranial cruciate ligament rupture at the age of 4 years. In that incidence, medial patellar luxation of the right leg was evaluated at grade 3, and grade 2 for the left leg and cranial drawer sign was identified from both legs. However, the owner decided to operate only on the right leg. That operation used Wedge resection sulcoplasty to fix the medial patella luxation and extracapsular stabilization by anchoring the lateral fabellar and tibial tuberosity for the cranial cruciate ligament rupture.

At the age of 5 years, the dog was diagnosed with tracheal stenosis of which clinical signs included chronic coughing, cyanotic mucus membrane, and normal lung and heart. After 1 month of treatment with antibiotics and bronchodilator, the dog recovered. However, the dog since then must keep continuing aminophylline 11 mg/kg every 12 hours and administration of bronchodilator using nebulizer in an oxygen chamber when necessary.

At the age of 6 years, the dog was admitted with clinical signs included depression, vomiting, and acute renal failure. Supportive and fluid therapy was given until hematological and biochemistry parameters were normal. Routine checking on blood parameters was scheduled to monitor azotemia and the dog was put on renal diet k/d until present.

Physical Examination

Seven years old dog was admitted with lameness of left hind limb and pain when palpated. Physical examination showed 101F body temperature, body condition score of 3/5, heart rate of 100 beats per minute, respiratory rate of 22 breaths per minute, dyspnea when nervous. Medial patellar luxation and cranial cruciate ligament rupture of the left leg was diagnosed.

Diagnostic plan and Results

Examination of the left leg found muscular dystrophy, lameness, weight bearing score of 2/5, positive cranial drawer test, medial patellar luxation of grade 3, thickening of medial articular capsule above proximal tibia (medial buttress), and joint dysfunction. Examination of the right leg also found muscular dystrophy, positive cranial drawer test, medial patellar luxation of grade 3, thickening of medial articular capsule above proximal tibia (medial buttress), and joint dysfunction. Radiographic examination showed normal hipbone and medial patellar luxation on both sides. Final diagnosis was medial patellar luxation of grade 3 and cranial cruciate ligament rupture of both legs.

Treatment and outcome

Due to previous history of tracheal stenosis that must be treated with aminophylline 11 mg/kg bid every day and acute renal failure of the dog, the owner decided to avoid anesthesia and operation, and also treatment with NSAIDs or steroids. Prior to this admission, the dog was treated with PCSO-524® (Antinol®) at the recommended dosage, 1 capsule per day for dogs under 20 kg for 10 days but the lameness and pain of the left leg still remained. Therefore dosage of PCSO-524® (Antinol®) was increased in this study to 1 capsule bid and clinical signs were monitored for efficacy and safety of the treatment.

The results showed that lameness score and pain on palpation significantly improved after 10 days of PCSO-524® (Antinol®) treatment at double dosage. The weight-bearing score did not change and remained stable throughout the treatment period (Table 1). During 45 days treatment of PCSO-524® (Antinol®), hematological test showed normal parameters (Table 2) and blood chemistry test showed normal ALT(SGPT), ALP, BUN, Creatinine andCholesterol (Table 3).

Radiographic examination after 45 days of treatment did not find any significant change and showed no progress of the disorder.

Discussion

The treatment in a dog suffered from grade 3 medial patellar luxation and cranial cruciate ligament rupture of both legs with PCSO-524® (Antinol®) at double dosage showed satisfactory outcome. Lameness of the left leg showed less pain on palpation. This is consistent with suggestion from Soontornvipart (2012) who used PCSO-524® (Antinol®) for osteoarthritis and degenerative spinal disease that the dosage should be doubled if prior treatment with recommended dosage did not improve clinical signs within 5 days. The double dosage can be reduced to recommended dosage when the pain is relieved. A clinical trial in dogs using PCSO-524® (Antinol®) for osteoarthritis and degenerative spinal disease showed improvement of clinical signs in most of the cases. The owners were satisfied with the treatment success. Radiographic images showed improvement in some dogs, however, some dogs showed worse images but improved clinical signs (Mongkon and Soontornvipart, 2012).

Normal hematological and blood chemistry parameters after 45 days treatment with PCSO-524® (Antinol®) indicated that it is safe to use for long term (Table 2 and 3). This agreed with a study of JamikornandYibchok-anun (2014) that PCSO-524® (Antinol®) was given at the recommended dosage and 3 and 5 times of the dosage for 8 weeks. The study found that visual, nervous, muscular, and integument system was normal, no change of behavior, and normal liver and kidney function.

Conclusion

PCSO-524® (Antinol®) used as a nutraceutical treatment can reduce pain in dogs affected from medial patellar luxation and cranial cruciate ligament rupture that operation is not feasible. The treatment is safe for long-term use and adverse effects have not been found. If the animals do not respond to treatment at regular dosage after 5 days, the dosage can be increased until the symptoms are relieved then the dosage can be reduced according to recommendation of veterinarians.

Tables and Figures

Table 1. Physical examination results before and after receiving 1 capsule bid of PCSO-524® (Antinol®) for 45 days

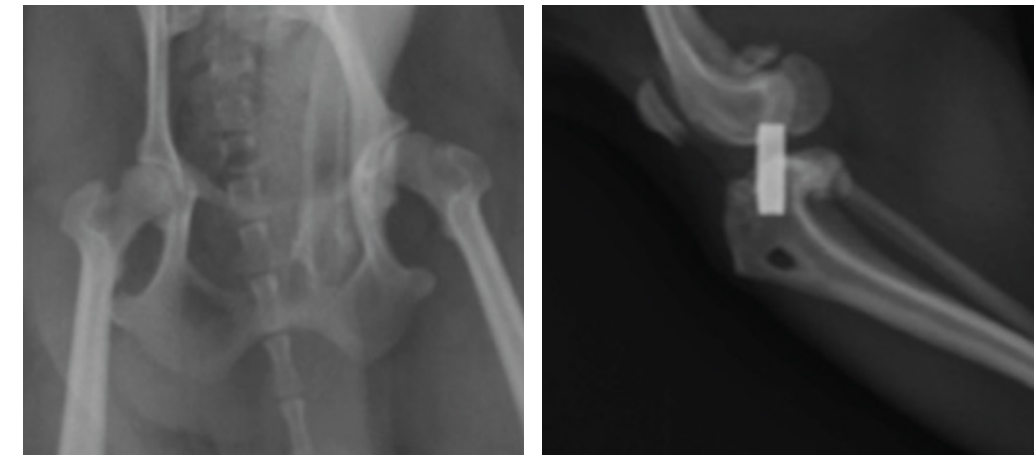
Examination	Day0	Day45
Left limb		
Lameness Score	4	2
Weight-bearing Score	2	2
Pain on palpation	3	1
Right limb		
Lameness Score	1	1
Weight-bearing Score	2	2
Pain on palpation	1	1

Table 2. Hematological test results after receiving daily 2 capsules of PCSO-524® (Antinol®) for 15 days

ค่าทางโลหิตวิทยา	หน่วย	ค่าปกติ	Day0	Day15	Day30	Day30
RBC	x10 ⁶ /ul	5.5-8.5	6.6	6.4	6.0	6.0
Hemoglobin	g/dl	12.0-18.0	15.8	15.2	12.3	12.3
Haematocrit	%	37.0-55.0	44	43	37	37
WBC	Cell/mm ³	6.0-17	8000	7000	10500	10500
Neutrophils	%	60-77	79	84	82	82
Bands	%	0-3	0	0	0	0
Eosinophils	%	2.0-10.0	6	0	1	1
Lymphocytes	%	12.0-30.0	14	13	14	14
Monocytes	%	3.0-10.0	1	3	3	3
Platelet	x10 ³ /ul	200-500	246000	228000	242000	242000

Table 3. Biochemistry test results after receiving daily 2 capsules of PCSO-524® (Antinol®) for 15 days

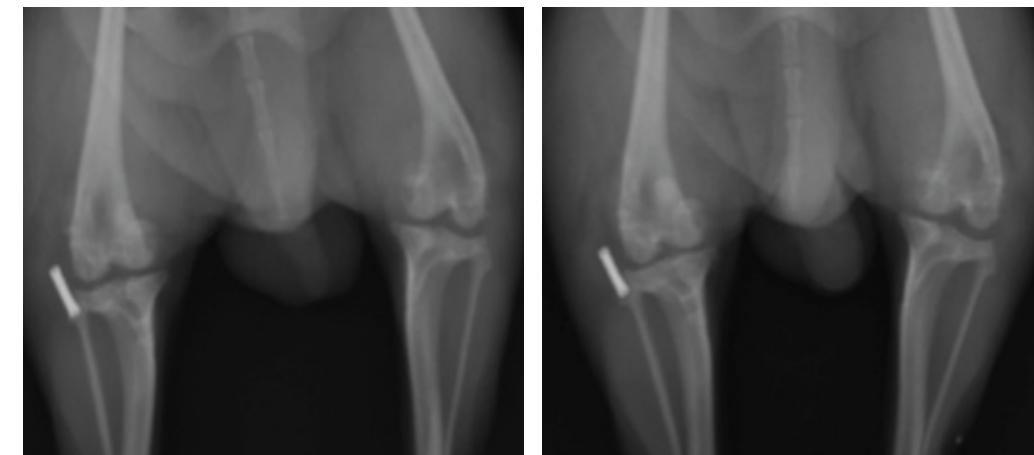
ค่าทางเคมีคลินิก	หน่วย	ค่ามาตรฐาน	Day0	Day7	Day14	Day30
ALT(SGPT)	Units	5.0-50.0	50	42	48	34
Alkaline Phosphatase	IU/Ls	20.0-120.0	102	87	65	39
BUN	mg%	10.0-22.0	18	12	14	16
Creatinine	mg%	0.4-1.5	1.1	1.3	0.9	1.1
Cholesterol	mg%	125-300	198	185	149	237



Before

After

Figure 1. Radiographic image of ventro-dorsal position before and after 45 days after receiving 2 capsules per day of PCSO-524® (Antinol®). The images showed physical characteristics of hip joint. No obvious change occurred after 45 days of the treatment.



Before

After

Figure 2. Radiographic image of ventro-dorsal position before and after 45 days after receiving 2 capsules per day of PCSO-524® (Antinol®). The images showed physical characteristics of medial patellar luxation and cranial cruciate ligament rupture of both limbs. No obvious change occurred after 45 days of the treatment



Figure 3. Radiographic image of ventro-dorsal position before and after 45 days after receiving 2 capsules per day of PCSO-524® (Antinol®). The images showed physical characteristics of right hind limbs with medial patellar luxation and cranial cruciate ligament rupture of both limbs. No obvious change occurred after 45 days of the treatment.

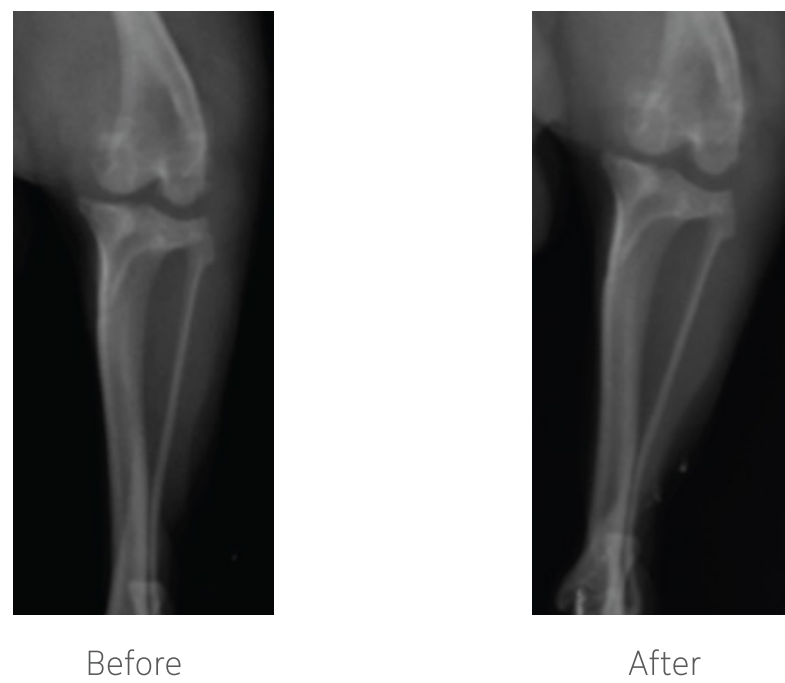


Figure 4. Radiographic image of ventro-dorsal position before and after 45 days after receiving 2 capsules per day of PCSO-524® (Antinol®). The images showed physical characteristics of left hind limbs with medial patellar luxation and cranial cruciate ligament rupture of both limbs. No obvious change occurred after 45 days of the treatment.

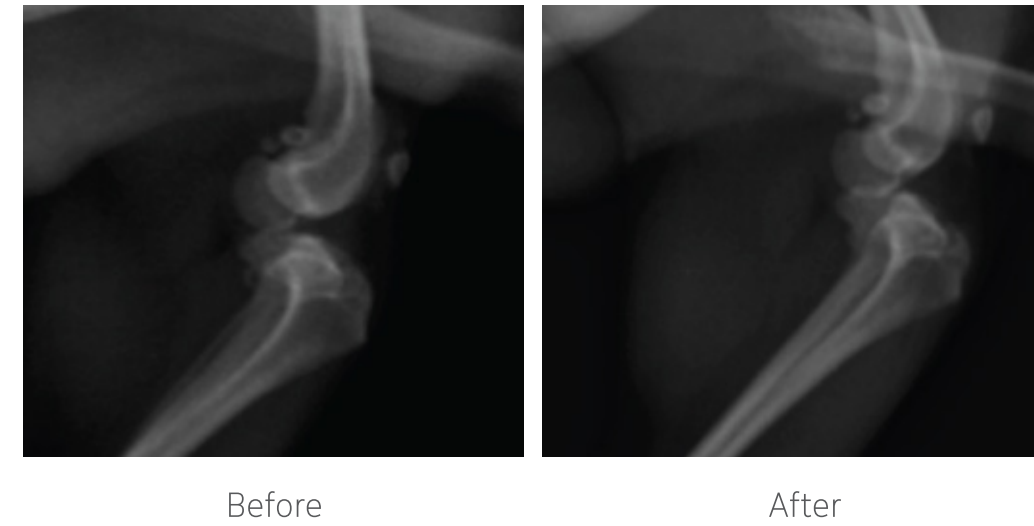


Figure 5. Radiographic image of lateral position before and after 45 days after receiving 2 capsules per day of PCSO-524® (Antinol®). The images showed physical characteristics of left hind limbs with medial patellar luxation and cranial cruciate ligament rupture of both limbs. No obvious change occurred after 45 days of the treatment.

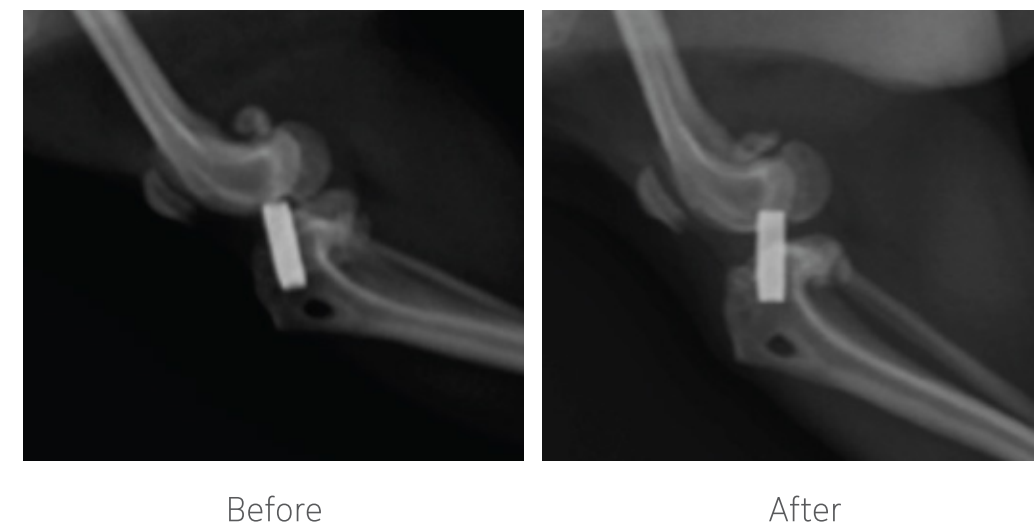


Figure 6. Radiographic image of ventro-dorsal position before and after 45 days after receiving 2 capsules per day of PCSO-524® (Antinol®). The images showed physical characteristics of right hind limbs with medial patellar luxation and cranial cruciate ligament rupture of both limbs. No obvious change occurred but the bone sclerosis was decreased, which may be the effect of position arrangement when taking the images.

References

1. กรกฎ งานวงศ์พาณิชย์. โรคข้อเข่าที่พบได้บ่อยในสุนัข Common canine stifle disease.พิมพ์ครั้งที่1.กรุงเทพ.สำนักพิมพ์แห่งจุฬาลงกรณ์มหาวิทยาลัย. 2556.
2. กรกฎ งานวงศ์พาณิชย์,ปฐมา เช้าเชด,ภณวีร์ วาฤทธิ,พีรพรรณ โปธาเจริญ, ศิริวรรณ อวงศ์ไชยและปรัชญา คงทวีเลิศ.ผลการเสริมหอยแมลงภู่นิวซีแลนด์ที่มีต่อระดับของสารบ่งชี้ทางชีวภาพในสุนัขที่กระดูกอ่อนผิวข้อบาดเจ็บ.เชียงใหม่สัตวแพทยสาร. 2551; 6: 161-171.
3. ศรินทร หยิบโซคอนันต์. การใช้สารสกัดจากหอยแมลงภู่นิวซีแลนด์ในการรักษาข้อเสื่อมในสุนัข.วารสารสัตวแพทย์ผู้ประกอบการบำบัดโรคสัตว์แห่งประเทศไทย.2555; 24(4):19-21.
4. Jamikorn,U.and Yibchok-auun,S.Effects of dietary polyunsaturated fatty acids supplement in healthy beagle dogs. The Thai Journal of Veterinary Medicine. 2014; 44(4): 505-512.
5. Kongwut, S., Soontornvipart, K.,Sarijaphuti, M., Makoom,P.and Nganvongpanit,K. Effect of serum IL-1beta of PCSO-524 and Firocoxib in dogs undergoing medial patellar luxation repair.Thai J Vet Med.2015; 45(4):639-643.
6. Mongkon,N.and Soontornvipart, K. Preliminary study of the clinical outcome of using PCSO-524 Polyunsaturated Fatty Acid compound in the treatment of canine osteoarthritis and Degenerative Spinal Diseases. Thai J Vet Med. 2012; 42(3): 311-317.
7. Soontornvipart, K., Mongkhon, N., Nganvongpanit, K. and Kongtawelert, P. Effect of PCSO-524 on OA biomarkers and weight-bearing properties in canine shoulder and coxofemoral osteoarthritis. Thai J Vet Med. 2015; 45(2): 157-165.
8. Soontornvipart, K. The preliminary study of the clinical outcome of using the PCSO-524 polyunsaturated fatty acid compound (Antinol®) in the treatment of canine osteoarthritis and degenerative spinal diseases.2012.

Illustrations

Figure 6. Weight bearing of hind limbs on day 0 and day 45



Day 0

Day 45



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