

DISCOVERING PES — A LONG AND WINDING ROAD

Introduction by Carol Mattingley

What follows is the journey one breeder travelled in the discovery of Puppy Eye Syndrome in her litter. What is shared can help us all understand the struggle we face.

Remember there are widely varying degrees of clinical expression of this disease, so the below case history gives you what was observed in one particular litter.

To be continued in the next issue of *The Courier* a case history of what it is like living with an older PWD with PES.

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This is a story of a long time owner/breeder of PWDs, a maiden bitch, and long planned for breeding. This is my story. My bitch was bred surgically with frozen semen at over two years of age. An ultrasound was done to confirm pregnancy at four weeks and showed +/- 7 embryos. The pregnancy was normal but a week prior to her first due date, my bitch looked depressed. We took her to the repro vet who took blood for progesterone level. It was low normal, so we played it safe and followed the vet's instructions for progesterone supplementation and scheduled a C-section for later in the week. Three days prior to C-section, an X-ray showed there were only five pups. She delivered two boys and three girls, a small male, an average male, a small female and two good size females. Our bitch had milk and was initially very receptive to her new pups.

The males were slow to start, especially the smallest. He had difficulties right from the start. He did not have a strong suck and could never hold on to the nipple by himself. The other male could stay on once he got on, but needed assistance getting on. The females did not need any assistance once they were shown the nipples.

In short order the bitch began having difficulties with the pups. She washed them incessantly. They would get wet and cold and cry, then the washing

cycle would begin again. This went on and on until the pups or the bitch was put away. The bitch just could not seem to settle with them, oftentimes pushing aside the males, which made us anxious as they needed so much more attention, calories, and warmth than the girls. It was necessary to stay in the room with the bitch constantly and observe her closely while she nursed the pups. We initially chalked it up to new mom/C-section. In retrospect, I am not so sure. I believe she knew better than her owners; that there was something wrong with her two male pups.

During the first week, the females nursed and napped and doubled their weight. They were fat, happy and content. The smallest male, despite extra time with mom and bottle feedings every four hours around the clock, barely held his own. The larger male gained with the extra feedings and bottle, but not much. They both continued to need lots of help and the bitch needed much insistence and support to stay in the box and nurse. The two males were thin and fretful.

By eight days, it was clear the smallest male was not improving, despite a few last ditch days of tubing every two hours. Whatever his issues were, they were not resolving. He was sucking the life out of us. After much consideration, he was taken to the vet, examined, had bloodwork drawn, was euthanized and sent to Cornell for necropsy. The findings were inconclusive. He did not have low platelets or other indicators of PES.



The bitch was more relaxed once this puppy was removed, but was still anxious around the pups and needed support to stay with them. She did continue to nurse and clean them. The females continued to grow and thrive, but the remaining male continued to be "different." He gained, but the gains were small relative to his littermates and the amount of time he spent nursing. He appeared weedy and developmentally behind his sisters, who were trying out their legs and moving about the whelping box. He was just "not right."

At about two weeks, the eyes opened as expected. The male's eyes seemed a bit small, but at that age it is hard to tell. Besides, he was small. There was no gross glaucoma or cataract. He continued to need help nursing and supplementation. At about this time, the females became much more active, up on their legs and getting about in the box, mouthing toys and each other. Not the male.

Over the next two weeks, the girls continued to thrive, but the male was making only small gains. At times he seemed lost and overwhelmed. Because the bitch continued to be anxious around them, the pups were started on solids (mush) at three to four weeks. They took to it well, including the male. We were thrilled to see how eager he was to eat and much time he spent at the bowl. He would eat and eat and end up covered in food, but he continued to have slow weight gain. We just could not understand it. He was

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mostly happy and played with toys and his littermates, but they were much larger and developmentally ahead of him. Because the bitch was spending little time with the pups, it was easy to note that unlike the females, the male had loose stool.

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Between five and seven weeks, he did grow and gain weight, albeit slowly. He negotiated his environment fairly well, played with his littermates, but oftentimes was in his own little world. He was just "different." His gait was odd and clumsy — which I rationalized to "just being behind," but I came to the realization that it was much more than that. It was more neurological in nature. By five to six weeks, the feeling he had small eyes and limited vision became a certainty.

He continued to have a good appetite, but was always covered in food and continued to have loose stool whereas the girls' stool was normal. When I gave him "alone feedings," I noticed that although he was very interested in the food and appeared to be eating a lot, he actually wore more than he consumed. His intake was not what I thought it should be for his efforts.

At seven weeks I brought the male to the vet where it was confirmed that he had microphthalmia and possibly cataracts. It was felt he had some limited sight. Bloodwork was sent out at that time. I was notified the following day

that this puppy had very low platelets and other abnormal findings consistent with PES. Very sad but by this time not a surprise. Looking back, this puppy had never been normal and things were as I suspected.

Eye exams (by eye diplomat) for the three females were found to be normal. The male was diagnosed with microphthalmia and cataracts.

At eight weeks I brought the three females to the vet for physicals and the male for labwork, euthanasia, and to be sent for necropsy to Cornell, Anatomic Pathology, Dept of Biomedical Sciences.

Necropsy Findings:

The following is a summary of the necropsy initial and final findings:

- Canine Portuguese Water Dog juvenile male intact puppy with good body condition, adequate fat stores, and mild autolysis (dead tissue).
- Eyes: moderate bilateral microphthalmia. Both eyes appear to have moderate corneal clouding and small globes. Both optic nerves are small at the optic chiasm.
- Abdominal wall and peritoneum: The musculature and viscera are diffusely pale.
- Mild, acute, multifocal small red pinpoint foci-petechial hemorrhage (Petechiae are broken blood vessels. Petechiae may be a sign of thrombocytopenia, low platelet counts, when platelet function is inhibited as in clotting deficiencies.)
- Testicles: Bilateral cryptorchidism. Both testicles are not descended and there is no defined scrotum.
- Gross Comments: Microphthalmia is a congenital condition characterized by a decreased globe (eye) size. It sometimes occurs in conjunction with cataracts, possibly leading to decreased vision. Dogs with microphthalmia can present with prominent third eyelids (due to the globe being more recessed in the orbit). No treatment options have been proposed for dogs with microphthalmia and possible complications of the condition include the development of glaucoma.

Final Diagnosis

Euthanasia

Bilateral microphthalmia with lenticular degeneration (cataracts)

The grossly evident microphthalmia has corresponding histologic correlates and the lenticular degeneration is consistent with bilateral cataract formation. 🐕