



VETCT
CONSULTANTS IN TELEMEDICINE

IT'S YOUR CASE

Species: Canine

Breed: Collie (Smooth)

Sex: Female Entire

Age: 4 months

Clinical History:

Washing machine murmur noted on first physical at primary veterinarian.

Details of study and technical comments:

This radiographic study includes a right lateral, a left lateral and two ventrodorsal projections of the thorax.

Diagnostic interpretation:

THORAX:

The cardiac silhouette is enlarged: Left atrial dilation as indicated by straightening of the caudal cardiac waste, divergence of the caudal mainstem bronchi and a double density sign (red arrows). The left auricular appendage is dilated (orange arrows). Left ventricular enlargement is indicated by dorsal displacement of the terminal trachea (yellow arrow) and axial displacement of the cardiac apex (dark blue arrows). The aortic arch is enlarged (green arrows) as is the main pulmonary artery (light blue arrows).

There is a moderate to marked hypervascular pattern with increased conspicuity of the small vessels in the periphery of the pulmonary parenchyma (purple arrows). This increases the general opacity of the pulmonary parenchyma and imparts a reticular pattern.

The trachea and mainstem bronchi are patent. The pleural space and mediastinum are unremarkable. The musculoskeletal structures are age-appropriate.



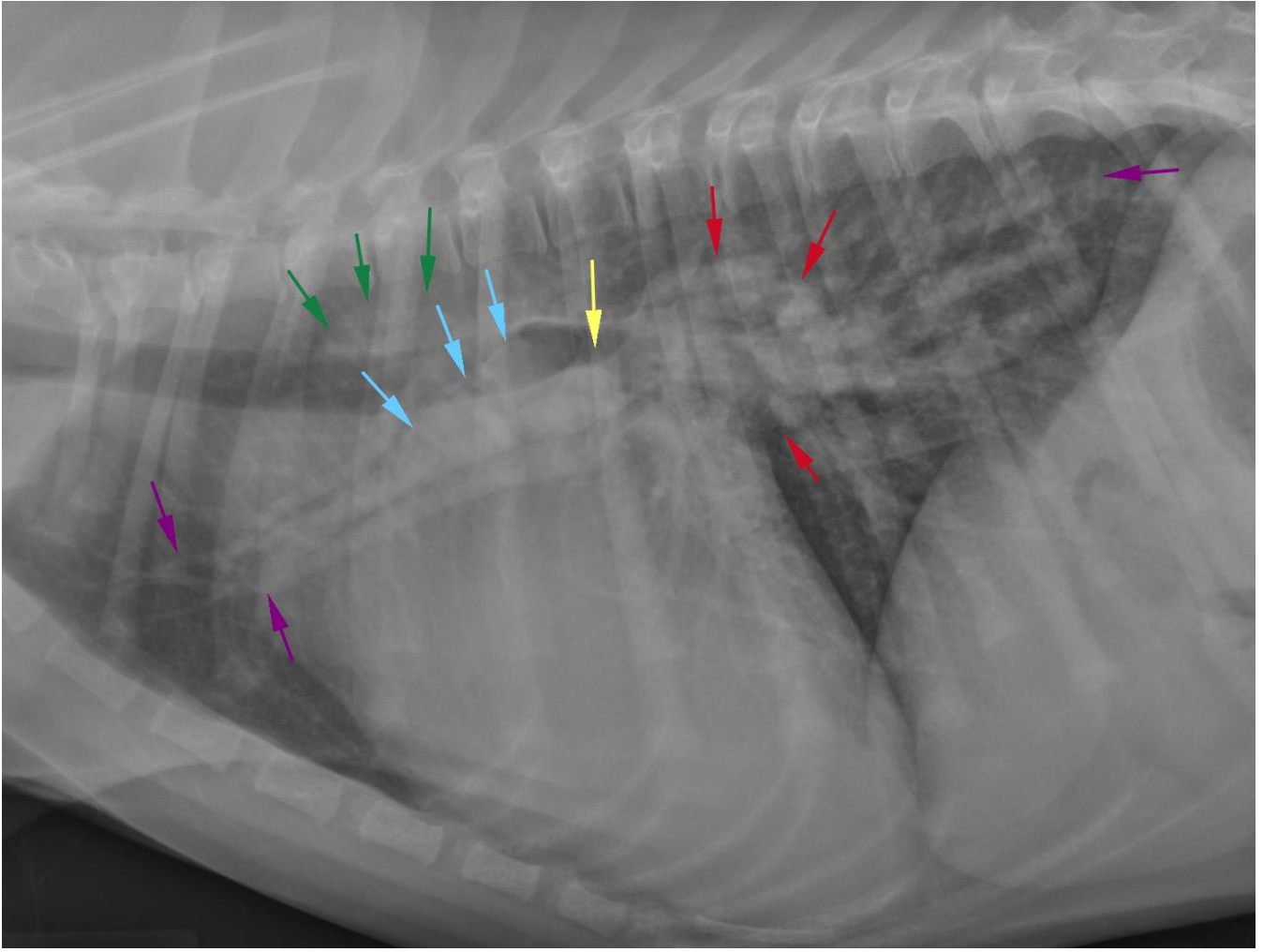
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This report is based on the available history and radiographic interpretation only and not on a physical examination of the patient. It must therefore only be interpreted by a currently licensed and registered veterinary surgeon responsible for the care of this patient.

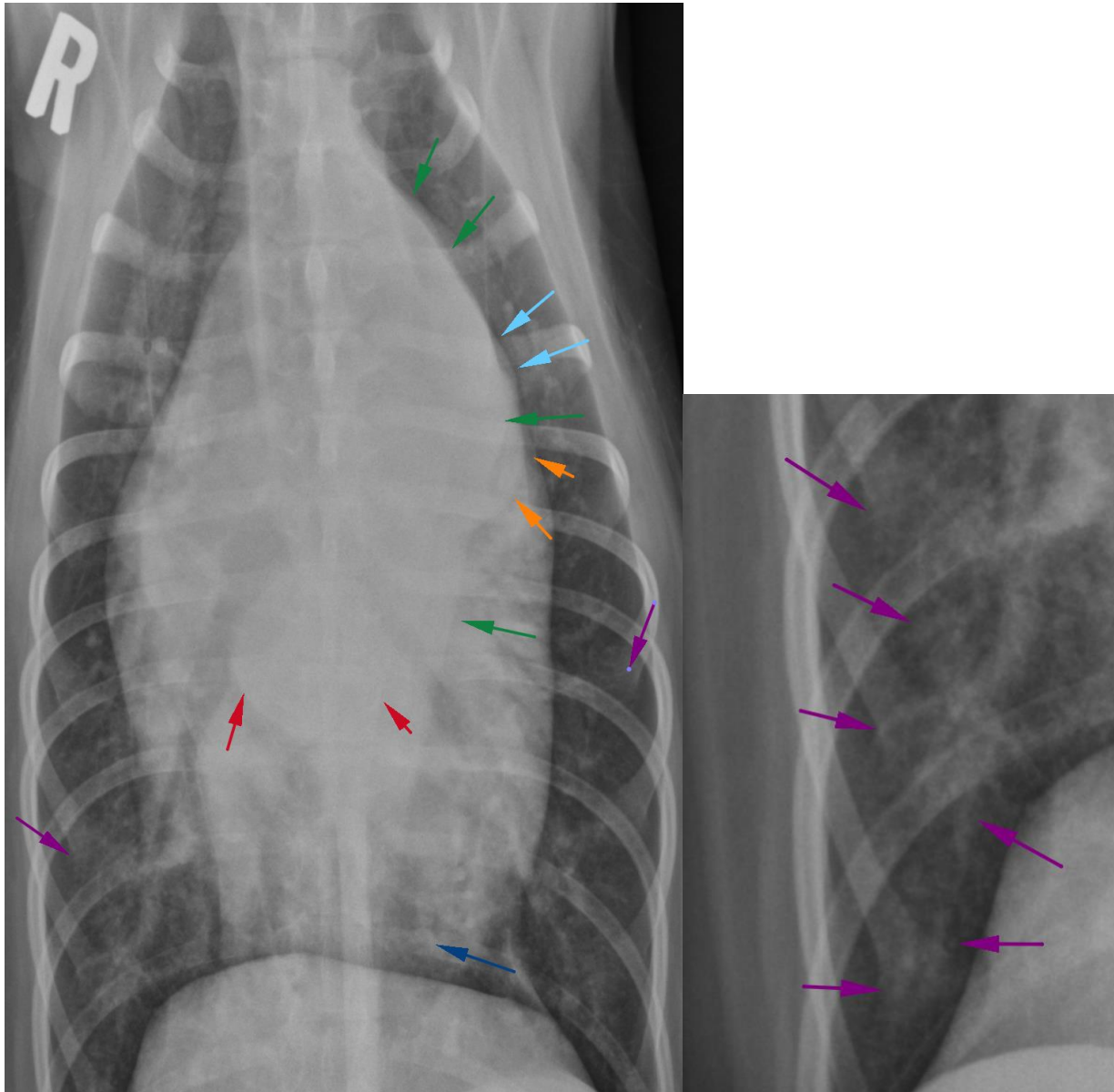


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Conclusions:

Left-sided cardiomegaly, aortic and main arterial dilation with hypervascular pattern is consistent with congenital cardiac anomaly. The most common left-to-right shunt that results in these findings is a patent ductus arteriosus (PDA).

The reticular pattern is attributed to peripheral vascular distention however early pulmonary oedema cannot be entirely excluded.

Additional comments:

In this patient, a patent ductus arteriosus reflects the failure of closure the foetal pulmonary bypass circulation. Initially, left-to- right shunting results in pulmonary over circulation manifesting as a hypervascular pattern observed here. The persistent volume overload of the left side (receiving blood from the right and over circulated lungs) results in left atrial and auricular appendage dilation as well as left ventricular eccentric hypertrophy and dilation of the great vessels. As seen in this case, the aortic, main pulmonary artery, and left



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auricular appendage “bumps” are present. These manifestations can occur in variable frequency in conjunction with left-sided cardiomegaly.

Pulmonary over circulation results in symmetrical vascular distention and increases the general opacification of the lungs. This challenges interpretation of early pulmonary oedema. Recognition of pulmonary oedema is critical as a prognostic indicator. The presence of left-sided heart failure is a poor prognostic factor when considering occlusion.

In progressive cases or cases with concurrent increased pulmonary outflow resistance (i.e. pulmonary stenosis or pulmonary hypertension), there is resultant increased pressure of the right side of the heart. Subsequent to this pathophysiologic shift, right- to- left shunting occurs (reverse PDA) and right-sided cardiomegaly is observed. This is known as Eisenmenger’s syndrome. This is also a poor prognostic indicator.

PDA is the most common congenital cardiac anomaly in dogs.

LITERATURE:

Broadus, K., & Tillson, M. (2010). Patent ductus arteriosus in dogs. *Compend Contin Educ Vet*, 32(9), E3.

Bureau, S., Monnet, E., & Orton, E. C. (2005). Evaluation of survival rate and prognostic indicators for surgical treatment of left-to-right patent ductus arteriosus in dogs: 52 cases (1995–2003). *Journal of the American Veterinary Medical Association*, 227(11), 1794-1799.



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