

Feline Heartworm Infection

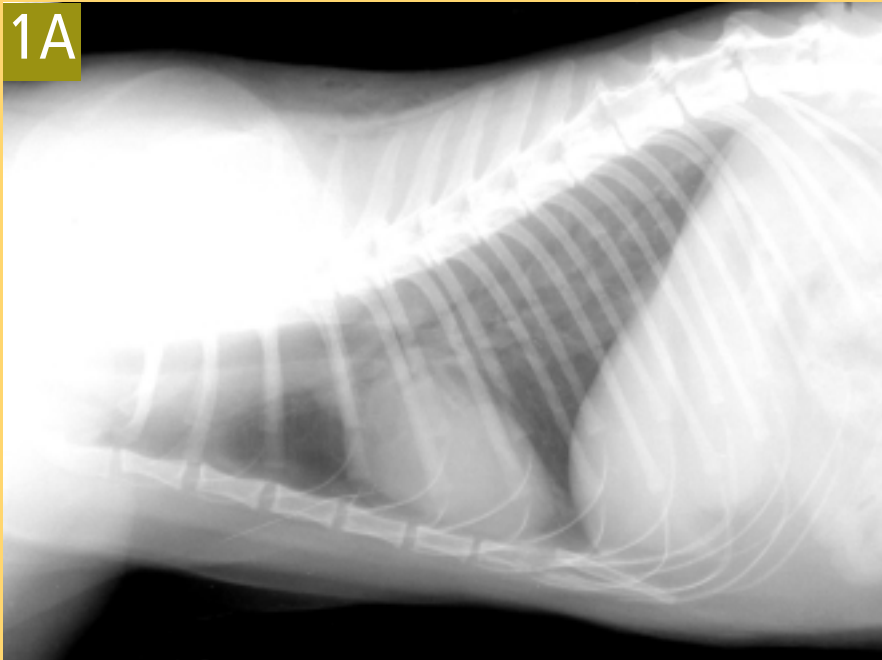
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In addition to serologic tests, thoracic radiography and cardiac ultrasonography are important diagnostic tests in feline heartworm infection.

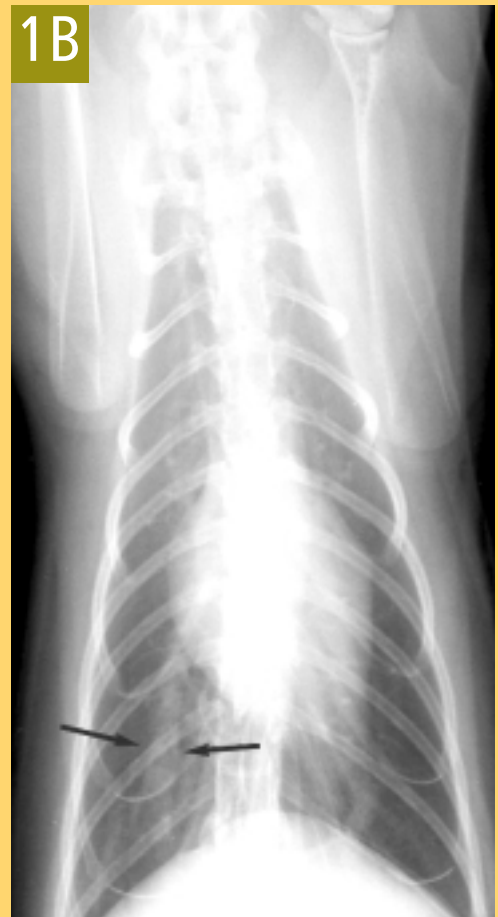
The cardiac silhouette of a cat with heartworms rarely has the “inverse D” appearance, or main pulmonary artery bulge, as seen in dogs. Cats more typically demonstrate radiographic findings compatible with feline bronchial disease (“asthma”). Nevertheless, certain findings, such as a caudal lobar pulmonary artery larger than 1.6 times the ninth rib at the ninth intercostal space, are quite suggestive of heartworm disease.

Cardiac ultrasonography is much more useful in cats than in dogs, simply because worm size relative to the size of pulmonary vasculature is greater in cats. Heartworms are most often found in the pulmonary arteries, requiring special imaging techniques. They may be visualized less frequently in the right ventricle, right atrium, or anterior or caudal vena cavae. The sensitivity approaches 80% for experienced sonographers. The adult heartworm appears as a double-lined structure as sound waves rebound from the cuticle. Echocardiographic quantification of worm burden is difficult.

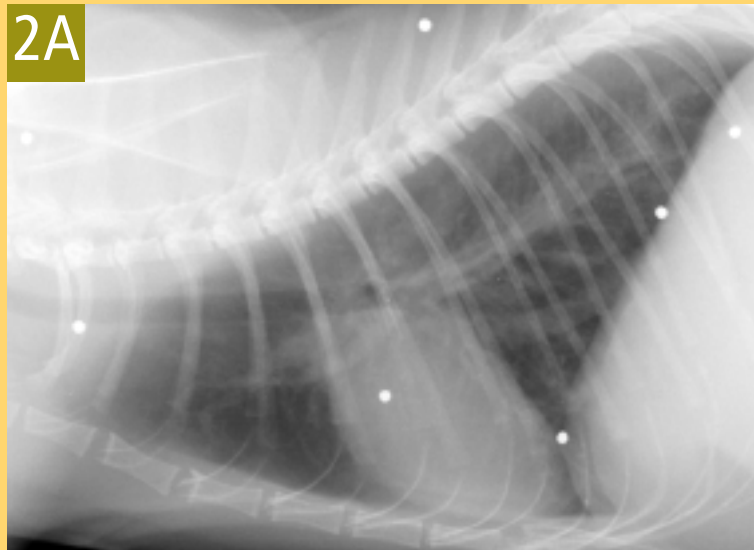
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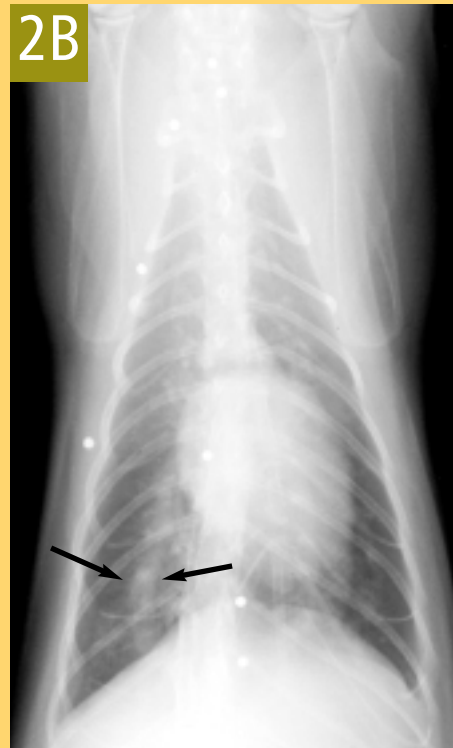
Lateral thoracic radiograph from a cat with heartworm disease. A fine interstitial pattern is noted in the caudal lung lobes, and the chest is somewhat hyperinflated. This radiographic pattern is similar to, and thus can be confused with, that of feline bronchial disease.



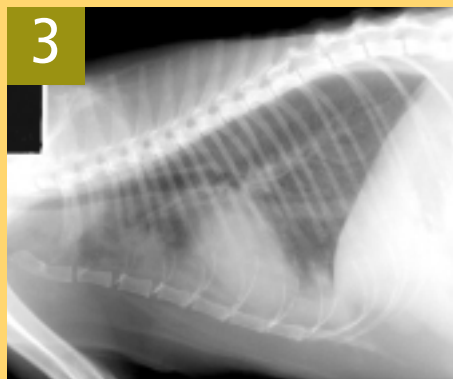
Dorsoventral thoracic radiograph from the cat in Figure 1A. Again, changes are subtle, but the right caudal lobar pulmonary artery is enlarged (>1.6 times the ninth rib at the ninth intercostal space [arrows]). The opposite pulmonary artery is somewhat tortuous. This finding is strongly suggestive of heartworm infection.



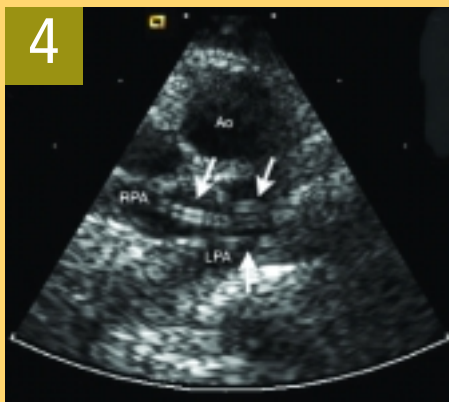
Lateral thoracic radiograph of a cat with heartworm disease and cough. Note the hyperinflated chest, flat diaphragm, and moderate interstitial pulmonary infiltrate. The right ventricle is mildly enlarged.



Dorsoventral thoracic radiograph from the cat in Figure 2A. The pulmonary infiltrate in the right caudal lung lobe is more readily appreciated in this view. Note the enlarged pulmonary artery in the right caudal lobe (arrows).



Lateral thoracic radiograph of a cat with severe respiratory distress and heartworm disease. Note the alveolar infiltrate in the ventral thorax and the less severe interstitial infiltrate more dorsally in the caudal lung lobes. This severe lung disease is probably due to heartworm death and may represent acute respiratory distress syndrome.



A short-axis, two-dimensional echocardiogram obtained from an 18-year-old, castrated male cat with cancer and an asymptomatic murmur. The heartworm can be identified by several sets of two echodense parallel lines, in the right pulmonary artery (arrows). Ao = aorta; LPA = left pulmonary artery; RPA = right pulmonary artery



The heart and lungs from the cat in Figure 4 are shown with the adult female heartworm (28 cm) in situ. The relative small size of the lung and pulmonary arteries compared with the size of the parasite is the reason heartworms can be found in most infected cats. Note that the multiple heartworm shadows identified in Figure 4 resulted from the serpentine configuration of only one heartworm. Hence, echocardiographic quantification of the exact number of worms is very difficult. ■