Cats with heart disease can present at any age. The presentation can be as an emergency with sudden onset respiratory distress due to pulmonary oedema or pleural effusion, or with a sudden onset of hind limb paralysis due to aortic thromboembolism. On the other hand of the spectrum, cats can be asymptomatic at a routine health check with a low- to medium-grade murmur, or gallop rhythm. The veterinarian must decipher whether the findings are related to a primary cardiac disease, or are related to systemic disease which affects the heart secondary as a target organ. This differentiation is important because the therapies are quite different.

Whenever a heart disease is suspected in an older cat, a primary cardiac disease always can be considered, however specific diseases affecting the heart as a target organ are more likely.

Various forms of cardiomyopathy, especially primary (idiopathic) hypertrophic cardiomyopathy (HCM), are the most common forms of acquired cardiac diseases in cats of any age, although other cardiomyopathies and degenerative valvular diseases are seen occasionally. Although cardiomyopathy is by definition idiopathic (assumed to be genetic), specific diseases such as those listed below may significantly affect cardiac anatomy and function in older cats, giving rise to murmurs, gallop rhythm, and heart failure.

- **Hyperthyroidism**: Hyperthyroidism is the most common endocrinopathy of domestic cats. It is usually the result of thyroid adenoma(s) or multiple hyperplasic nodules which may be unilateral or bilateral. Not all nodules are palpable. Functional thyroid tissue may produce increased amounts of thyroxine (T4), leading to clinical signs including a loud and fast heart, a prominent precordial impulse, a strong pulse, weight loss with good appetite, heat intolerance, behavioural changes and polydipsia/polyuria. Untreated hyperthyroidism damages a variety of organs, particularly the heart and kidneys.

- **Systemic hypertension**: The most obvious reason for suspecting that a cat is hypertensive, and therefore measuring its blood pressure, is that it is exhibiting consistent clinical signs (blindness, central neurological disease, newly developed heart murmur). Chronic kidney disease is the problem most commonly associated with severe hypertension in the cat. Hyperthyroidism is commonly cited as a major cause of hypertension in the cat. Recent studies have suggested that only about 10% of hyperthyroid cats are hypertensive at the time of diagnosis and the concurrent diagnosis of hyperthyroidism and hypertensive ocular disease is infrequent. However, a significant proportion (about 20%) of cats actually develop hypertension with treatment for hyperthyroidism. Therefore it is not only necessary to measure blood pressure in hyperthyroid cats at the time of initial diagnosis, but also to follow their blood pressure during treatment. Other potential (but relatively less common) endocrine causes of hypertension include hyperaldosteronism and pheochromocytoma. Currently about 20% of the cats diagnosed with hypertension have no apparent underlying cause (so called idiopathic or primary hypertension). These are cats that are non-azotaemic and have normal total thyroxine concentrations, although it is possible that many of these cats have sub-clinical renal disease. The average age of cats diagnosed with idiopathic
hypertension is 15 years, with almost all being >12 years. Heart disease does not cause hypertension.

- **Taurine deficiency** causing dilated cardiomyopathy (now rare)

- **Other disease processes** may infrequently affect the heart, e.g., chronic anaemia, acromegaly, feline infectious peritonitis (FIP), neoplasia.

Murmurs may also arise due to dynamic right ventricular outflow tract obstruction. These murmurs may be functional (i.e., no evidence of cardiac or non-cardiac disease).

**Given the above, investigation of a newly developed murmurs, gallop rhythm, or heart failure in an older cat should include:**

- Blood pressure measurement (oscilometric or Doppler) as the murmur may be due to cardiac remodelling consequent to systemic arterial hypertension.
- Routine serum biochemistry and haematology should also be performed and as a minimum data base total T4, urea, creatinin, and electrolytes (Na, K) should be measured. In addition, routine urine analysis is indicated.
- Doppler echocardiography in cats will usually identify the structural changes responsible for the murmur or gallop, functional changes and give some indication as to the imminence of congestive heart failure. Thereafter, serial monitoring can be performed as appropriate.
- Other investigations may be indicated, e.g., thoracic radiographs to look for evidence of congestive heart failure or other thoracic disease, or an electrocardiogram (ECG) for arrhythmias.

Using case-examples, the approach to older cats with heart disease will be explained during the lecture.

References: can be provided upon request.