

# 111級 小內期末

- 
1. 請問正常的 ventricular action potential，如果 fast Na<sup>+</sup> channels 在 inactivated state，而 slow Ca<sup>2+</sup> Channels打開，然後大多數 K<sup>+</sup> channels 仍然保持關閉，請問這種情形是發生在下列哪一期？
- a. Phase 1 (partial repolarization)
  - b. Phase 2 (plateau)**
  - c. Phase 3 (repolarization)
  - d. Phase 4 (rest)
- 
2. 請位在ECG上，代表cardiac action potential 通過 AV node 之期間，下列何者？
- a. PR interval**
  - b. RR interval
  - c. ST interval
  - d. PP interval
- 
3. 在正常 ECG 上，關於第一導程 (lead I) T-wave 的敘述，下列為真？
- a. 永遠為 negative
  - b. 如果 R wave 為 positive，則永遠為 positive
  - c. 因心房與心室間的 depolarization 有延遲而產生
  - d. 因 ventricular repolarization 而產生**
- 
4. What would the lead I ECG/apk like if an ectopic pacemaker in the free wall of the left atrium subsumed the role of the SA node (ie., "took over" The initiation of atrial action potentials)?
- a. The ECG would appear normal.

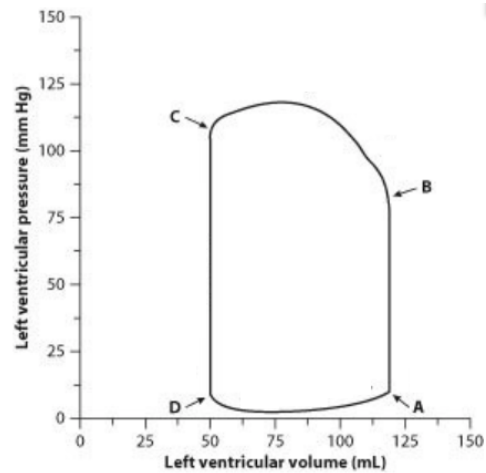
- b. The P waves and T waves would appear normal, but there would be no R waves.
  - c. The P wave would be negative and the R wave would be positive.
  - d. The P wave would be negative and the R wave would be negative.
- 
5. 下列所舉之arrhythmias, 何者每分鐘心房速率會高於每分鐘心室速率
- a. Complete (third-degree) AV block
  - b. Frequent premature ventricular contractions
  - c. Sick sinus syndrome (sinus bradycardia)
  - d. Ventricular tachycardia
- 
6. in which of the following arrhythmias will the ECG characteristically show the same number of P waves and QRS complexes?
- a. First-degree AV block
  - b. Complete (third-degree) AV block
  - c. Ventricular tachycardia
  - d. Atrial flutter
- 
7. 犬的ventricular tachycardias 在臨床上常被認為比 Supraventricular tachycardias 重要, 請問理由是?
- a. Supraventricular tachycardia 多為偶發, 通常自行回復normal sinus rhythm, 而 Ventricular tachycardia 則是由 Severe cardiomyopathies 所致, 因此代表有嚴重的underlying disease 存在
  - b. supraventricular tachycardia 事實上其臨床重要性不下於ventricular tachycardia, 因為兩者都會導致 cardiac arrest 與 death
  - c. 遇到 Supraventricular tachycardias : 只要是 beta blocker 或 calcium channel blocker 都很容易控制, 而針對 ventricular tachycardia的內科治療, 相較之下就比較差

- d. 雖然 Supraventricular tachycardias 有可能變成 atrial fibrillation，甚至進而引發 progressive left ventricular dysfunction，但 ventricular tachycardias 則是造成 ventricular fibrillation 與 death
- 
8. During a normal cardiac cycle, which of the following events happens soonest after the heart sound is heard?
- a. Ventricular ejection begins.
  - b. Atrial contraction begins.
  - c. The mitral valve opens.
  - d. The aortic valve closes.
- 
9. In the normal cardiac cycle:
- a. The P wave in the electrocardiogram coincides with the beginning of ventricular ejection.
  - b. The second heart sound coincides with the beginning of isovolumetric relaxation.
  - c. Left ventricular pressure reaches its highest level just as the aortic valve closes.
  - d. Aortic pressure reaches its highest level at the beginning of ventricular systole.
- 
10. An abnormality that causes a sustained decrease in left ventricular compliance is most likely to result in an increased:
- a. Left ventricular stroke volume
  - b. Left atrial volume and pressure
  - c. Left ventricular afterload,
  - d. Left ventricular end-diastolic volume
- 
11. 對一個正常心臟而言，下列 cause-and-effect 敘述，何者為真？
- a. 心率維持在很高的速率，會使得 Stroke volume 減少

- b. Sympathetic activation 會使得 end-systolic ventricular volume 增加
- c. Ventricular preload 增加會使得 end-diastolic ventricular volume 減少
- d. Ventricular contractivity 增加，會使得 Systolic duration 增加

12. 如上圖，左心室在一次正常心動周期的壓力與容積變化之變化圖，請問下列敘述何者為真？

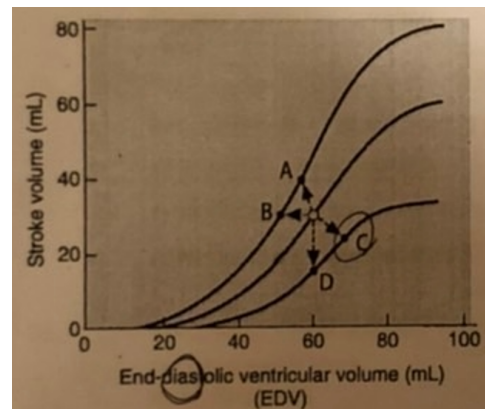
- a. Point A marks the closure of the aortic valve.
- b. Point C marks the opening of the mitral valve.
- c. Point A marks the beginning of isovolumetric contraction.
- d. Point D marks the beginning of ventricular systole.



- A：等容收縮起始
- B：收縮起始
- C：等容舒張起始
- D：舒張起始

13. 如上圖 open circle 所在的位置，當 contractility 降低與 preload 增加時，請問 open circle 會移到哪一點？

- a. Point A
- b. Point B
- c. Point C
- d. Point D



#### 題組14-17

下列各種利尿劑，請分別指出其在腎元（renal mephron）內主要作用位置的解剖部位

- a. Proximal tubule

- b. Ascending limb of the loop of Henle
  - c. Distal tubule — early part
  - d. Late distal tubule and collecting duct
14. Acetazolamide **A**
15. Spironolactone **D**
16. Furosemide **B**
17. Chlorothiazide **C**
- 
18. Fluid and electrolyte imbalance leading to dehydration, muscle weakness, hypokalemia, and CNS depression may result from high or prolonged dosage with
- a. chlorothiazide
  - b. amiloride
  - c. furosemide**
  - d. theophylline
- 
19. 下列屬於 hydralazine 的敘述何者為真？
- a. Hydralazine directly dilates arteriolar smooth muscle.**
  - b. Hydralazine acts to dilate both arterioles and veins.
  - c. Hypotension and reflex tachycardia are uncommon side effects.
  - d. Hydralazine dampens the neurohumoral compensatory response in heart failure.
- 
20. 當聽診發現心雜音為 Crescendo-decrescendo 的模式，代表動物最有可能是下列何種異常？
- a. Mitral valve regurgitation
  - b. Subaortic stenosis**
  - c. Aortic valve regurgitation**
  - d. Tricuspid valve regurgitation
-

21. 關於 pimobendan 的敘述,下列何者正確?

- a. 經口服吸收後，貓的血中濃度會高於犬
  - b. 與食物搭配,吸收效果最好
  - c. 作用是抑制PDE III，減少細胞內 cAMP 濃度
  - d. 不具有 calcium sensitizers 的作用
- 

22. 列所章之異常，何者是您最不可能只象聽診，就能臆斷該犬有這個問題？

- a. First degree AV block
  - b. Atrial fibrillation
  - c. Gallop rhythm
  - d. Sinus arrhythmia
- 

23. 有一隻中年成犬被您發現有一個很大的 ventricular septal defect，為左到右分流，請問下列所舉，何者是該犬胸腔最可能出現的 radiographic appearance？

- a. Enlargement of all 4 heart chambers and hyperperfusion of the pulmonary vasculature
  - b. Left atrial and left ventricular enlargement with pulmonary hyperperfusion.
  - c. Right ventricular enlargement with pulmonary hyperperfusion and a normal left heart
  - d. Right ventricular and left atrial enlargement with pulmonary vasculature hypoperfusion
- 

24. 當犬有mitral regurgitation，隨病程惡化，最後最可能會出現

- a. Concentric hypertrophy of the left atrium and left ventricle
  - b. Concentric hypertrophy of the left atrium and eccentric hypertrophy of the left ventricle
  - c. Eccentric hypertrophy of the left atrium and concentric hypertrophy of the left ventricle
  - d. Eccentric hypertrophy of the left atrium and left ventricle
-

25. 關於 Pulmonary veno-occlusive disease (PVOD)或 pulmonary capillary hemangiomatosis (PCH)的敘述，何者錯誤
- a. 大多數病例的病程progressive course
  - b. 主要是造成肺微靜脈與微血管出現阻塞病變，也會影響肺小動脈
  - c. 放射影像通常為 interstitial 或 alveolar pattern，其 distribution 大多為 caudodorsal
  - d. 口服 sildenafil 期間，要控是否會出現 pulmonary edema
- 
26. 關於Pulmonary alveolar proteinosis，下列敘述何者為正確？
- a. 此病為肺部創傷導致血管通透度改變所致
  - b. 使用steroid治療的效果很好
  - c. 本病須以CT確診
  - d. 以上皆非
- 
27. 一隻6月齡未絕育雄性 German Shepherd dog，欲做castration 前來做術前檢，檢查發現在左側心尖部可清楚聽到 IV/VI holosystolic murmur，而thoracic radiographs 也顯示 left atrium 為中等程度擴大，請問最有可能的診斷為？
- a. Mitral valve dysplasia
  - b. Tricuspid valve dysplasia
  - c. Subaortic stenosis
  - d. Myxomatous degeneration of the mitral valve
- 
28. 一隻 10 歲齡雄性已絕育短毛家貓，進行年度健檢,發現 III/VI parasternal systolic murmur。其胸腔放射影像也看到 moderate cardiomegaly，所以就做 echocardiogram 以進一步釐清，結果顯示該貓除有 moderate left ventricular concentric hypertrophy 之外，還有 systolic anterior motion of the mitral valve(SAM)，請問根據該貓的情況，下列檢查何者為最不必要的項目？
- a. Doppler blood pressure
  - b. Serum and plasma taurine levels
  - c. Thyroid testing

d. An ocular fundic examination

---

29. 請問下列何者最有可能引發犬 cardiac tamponade?

- a. Dilated cardiomyopathy
  - b. Heartworm (Dirofilaria immitis)
  - c. Mitral valve dysplasia
  - d. Right atrial hemangiosarcoma
- 

30. 限制型心肌病(RCM)的心肌型(Myocardial form)，列何不是其心超音波影像的主要特徵

- a. 心肌間質出現片狀 (patchy) 至瀰漫 (diffuse) 纖維化 (fibrosis)
  - b. 左心房或左右心房擴張
  - c. LV 心尖變薄或出現動脈瘤 (aneurysm)
  - d. 正常 LV 內徑及厚度
- 

31. 一隻9歲齡雄性已絕育的 English setter，因 lethargy、anorexia、tachypnea 前來就診。

你的physical exam發現markedly heart sounds，請問下列何者最支持 pericardial effusion的診斷

- a. Electrical alternans and pulsus paradoxus
  - b. Thoracic radiographs where the interface of the heart and lung parenchymia is obscured
  - c. Weak pulses and hepatomegaly
  - d. Waterhammer pulse
- 

32. Which of the following findings is consistent with Tetralogy of Fallot in a dog ?

- a. Left ventricular hypertrophy
- b. Severe generalized cardiomegaly on thoracic radiography



c. Aortic stenosis

d. Polycythemia

---

33. 一隻2歲齡雌性未絕育miniature schnauzer來院做年度健康檢查。Cardiac auscultation 發現左側心基部可清楚聽到??/VI systolic murmur。Thoracic radiographs顯示mild right ventricular enlargement。還有enlarged segment of the main pulmonary artery，請問下列何者最可能？

a. Pulmonic stenosis

b. Aortic stenosis

c. Tricuspid dysplasia

d. Myxomatous mitral valve disease

---

34. 一隻12歲齡Golden retriever，突然出現weakness、dyspnea和exercise intolerance。其femoral pulse微弱，但心率規則。每分鐘次數為190beats/min。聽診發現心音模糊(muffled)。身體診察亦發現jugular vein distention，並懷疑該犬還有ascites的問題。該犬的mucous membranes為pale pink，請問根據上述各種症狀，最有可能的原因為？

a. Splenic lymphoma

b. Dilative cardiomyopathy

c. Auricular hemangiosarcoma

d. Hypertrophic cardiomyopathy

---

35. 一隻English bulldog聽診發現grade V/VI systolic murmur，最大強聲點(PMI)在左側心基部，該犬的femoral pulses正常。心電圖顯示在lead I、II、III與aVF均出現deep S wave，其mean electrical axis為+160度。根據以上發現，最有可能的病因為？

a. Subaortic stenosis

b. Ventricular septal defect

c. Pulmonic stenosis

d. Patent ductus arteriosus

---

36. 一隻10歲齡雄性絕育短毛家貓，先前曾診斷出hyperthyroidism，今因acute onset of blindness前來就診，進行ophthalmic exam發現retinal hemorrhage。請問下列哪一個 diagnostic test應優先進行？

a. Blood pressure

b. Total T4 levels

c. Free T4 levels by equilibrium dialysis

d. Serum BUN and creatinine

---

37. 10歲齡雌性已絕育短毛家貓(domestic short haired ; DSH)，因losing her balance前來就診，飼主主訴該貓這幾天跳上櫃子好像會抓不準距離，已經撞到好幾次。進行 fundic examination發現右眼有engorged retinal vessels of the right eye，左眼retina看起來很hazy，難以看清楚optic nerve或vessels的detail，兩眼的pupils都是 markedly dilated，左眼的menace消失，右眼仍有視力。所以我們懷疑左眼有 detached retina，進行blood pressure (BP)量測。該貓在量測BP並無緊迫或掙扎的現象，血壓的average systolic blood pressure 為260mmHg，你再三確認，並沒有看錯，請問下列何者用藥應優先考慮？

a. Furosemide

b. Pimobendan

c. Amlodipine

d. Enalapril

---

38. 一隻9月齡的 995 看不清楚題目

b. Atrial septal defect with systemic hypertension

39. 幼犬的無害性心雜音(innocent puppy murmurs)，一般會在接近幾月齡時消失？

a. 3月齡

b. 6月齡

c. 9月齡

d. 1歲齡

40. 下列何者會出現 diastolic murmur ?

a. Mitral insufficiency

b. Patent ductus arteriosus

c. Aortic insufficiency

d. Ventricular septal defect

---

41. 一隻貓因呼吸困難前來就診，問診時，飼主告知該貓吃狗罐頭吃了八年，請問下列何者是最可能的differential diagnosis?

a. Hypertrophic cardiomyopathy

b. Atherosclerosis

c. Arrhythmia from a vitamin deficiency

d. Dilated cardiomyopathy

---

42. 一隻10歲齡雄性已絕育Collie，因他院診斷為heart failure轉診至本校就醫，請問下列所舉，何者不是right heart failure的典型症狀？

a. cough

b. tachypnea

c. hepatomegaly

d. Exercise intolerance

---

43. 關於hypertensive retinopathy，其特徵可見

a. tortuous vessels

- b. retinal hemorrhage
- c. retinal detachment

d. 以上皆是

---

44. 根據2019年ACVIM對myxomatous mitral valve disease診斷與治療共識聲明，關於stage B2的敘述，下列何者正確

- a. Murmur intensity、LVIDDN、LA/AO、VHS只要有一項符合EPIC trial criteria就可以開始進行pimobendan的治療
- b. 可routine使用ACEi與spiro lactone延遲CHF發作

c. Mild dietary sodium restriction

- d. 有證據顯示使用beta blocker可延遲CHF發作
- 

45. 根據2019年ACVIM對myxomatous mitral valve disease診斷與治療共識聲明，關於stage D的敘述，下列何者錯誤

a. 只要進入stage D，代表動物對furosemide產生抗性，就應將利尿劑由furosemide換成torsemide

- b. 若動物出現因肺高壓引發的腹水，可使用sildenafil治療

c. Hydralazine或amlodipine的作用除了降低afterload外，也可降低cough frequency

- d. Beta blocker原則不建議，除非用atrial fibrillation

答案：

---

46. 一隻6月齡雄性German Shepherd Dog因需castration，前來做術前檢查，檢查發現左側心尖部(apex)有4/6級的systolic murmur，進行thoracic radiographs發現moderately enlarged left atrium，請問下列何者為最有可能的differential diagnosis?

a. Mitral valve dysplasia

- b. Tricuspid valve dysplasia

c. Myxomatous degeneration of the mitral valve

- d. Aortic stenosis

- 
47. 根據2020年ACVIM對cardiomyopathies分類、診斷與治療共同聲明，下列敘述何者錯誤
- a. Stage B1與B2的區別，重點在於CHF或ATE的風險
  - b. HCM為最常見的CM表現型
  - c. MyBPC3-A31P突變與MyBPC3 R820W突變可廣泛應於貓心肌病的篩檢
  - d. NT-proBNP測定不建議用於區分健康貓與輕至中度HCM患貓
- 
48. 根據2020年ACVIM對cardiomyopathies分類、診斷與治療共同聲明，下列敘述何者正確
- a. 可用6導程ECG作用為篩檢貓心肌病的工具
  - b. 所有LV室壁增厚的貓均須進行BP測量
  - c. 左心室出口動脈性阻塞(DLVOTO)與5年存活率有關，發現即應使用藥物治療
  - d. 在Acute decompensated heart failure，為避免furosemide造成的脫水，可使用maintenance輸液治療
- 
49. 請問下列疾病，何者最有可能出現bounding pulses?
- a. Subaortic stenosis
  - b. Pulmonic stenosis
  - c. Atrial septic defect
  - d. Patent ductus arteriosus
- 
50. 一之14歲齡雄性已絕育的Maltese，聽診發現grade IV/VI systolic murmur，最大聲強點(PMI)在左側心尖部，身體診察發現femoral arterial pulses強度正常，而jugular vein 與mucous membrane也無明顯異常，呼吸方面則有tachypnea與labor breathing之情形，由病史得知該犬有咳嗽症狀，且呈lethargy與無食慾已達3天之久。進一步檢查，該犬的血壓為收縮壓144mmHg，舒張壓為82mmHg，胸腔放射影像可見嚴重的心臟腫大(cardiomegaly)，此外，尚可見肺靜脈鬱血(pulmonary venous congestion)與泛發性重度肺水腫(severe generalized pulmonary edema)，心臟超音波檢查顯示左心室與左心房皆擴大，心室收縮力評估為hyperdynamic，還有severe mitral regurgitation，關於該犬的治療，下列何者最不適當?

a. 使用Dopamine，緩慢定速輸液(CRI)

b. 患犬應住院治療

c. 應給予oxygen supplementation

d. 使用pimobendan口服治療

---