

Candidate No.:



ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

Neurosurgery  
Fellowship Examination

First paper  
Essay Questions - 1.5 hours

Wednesday 2 April 2008

All Questions must be answered and are of equal value. Question three consists of 30 multiple choice components.

**Question 1**

A 36 year old right handed female noticed a progressive loss of vision in the left eye. Examination revealed optic disc pallor. MRI revealed a non contrast enhancing lesion (Fig 1 and 2)

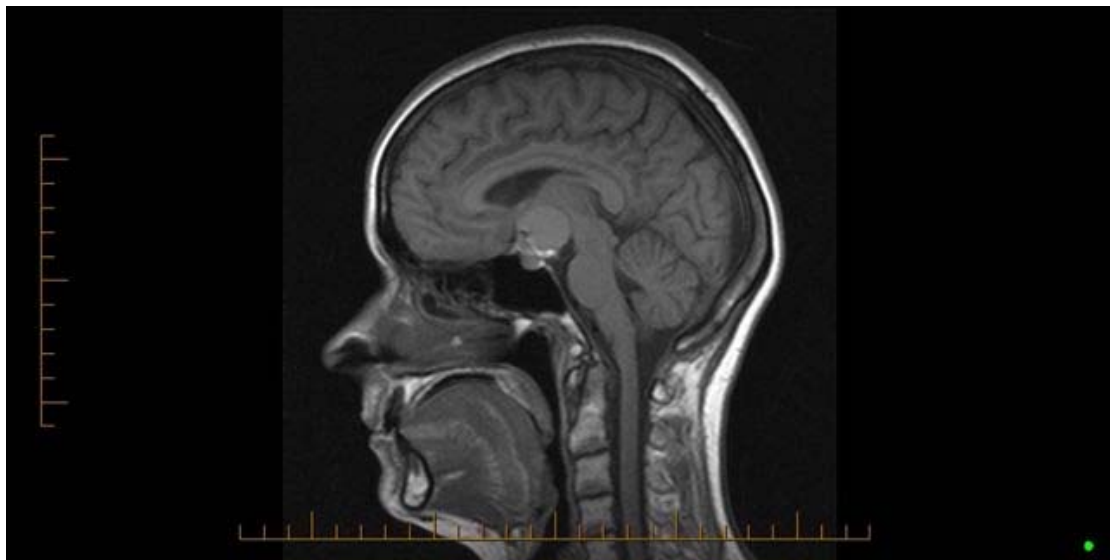
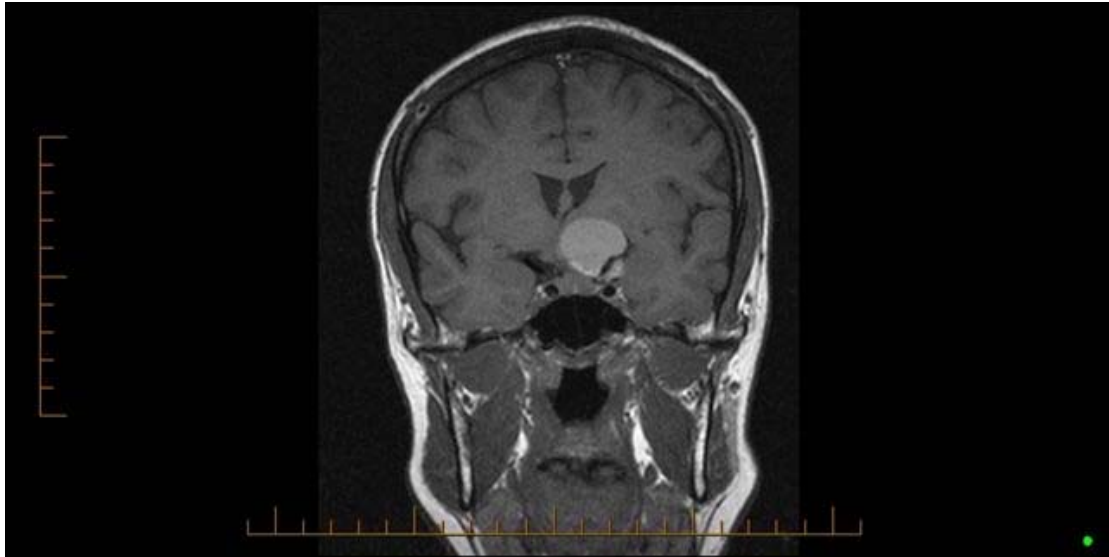


Figure 1



**Figure 2**

Describe:

1. The differential diagnosis of this lesion
2. The anatomical basis of the potential visual field defects on formal visual perimetry
3. Your preferred option in surgical approach to this lesion
4. The possible endocrine abnormalities associated with surgery and how they are managed
5. Your conversation with the patient and her partner concerning the risks of your surgical approach

## Question 2

Write notes on:

1. Empty sellar syndrome
2. Tardy ulnar palsy
3. Mesial temporal sclerosis
4. Prognosis of closed head injury
5. Symptomatic trapped 4<sup>th</sup> ventricle in a 30 year old female with spina bifida

**Question 3**

Neurosurgery MCQ Paper (30 questions - 30 minutes)

**Please follow instructions as detailed on accompanying MCQ Paper**

**Candidate No.:**



**ROYAL AUSTRALASIAN COLLEGE OF SURGEONS**

**Neurosurgery  
Fellowship Examination**

Second paper - 2 hours

**Wednesday 2 April 2008**

**All Questions must be answered and are of equal value**

**Question 4**

Outline the important aspects of the history, examination and investigations that help distinguish between

1. Normal pressure hydrocephalus and dementia
2. Trigeminal neuralgia and atypical facial pain
3. Thoracic outlet syndrome and lower cervical radicular pain
4. Latrogenic fluid overload and inappropriate secretion of antidiuretic hormone
5. A common peroneal neuropathy and Lumbar 5 radiculopathy

### **Question 5**

Give an account of the anatomy and distribution of the vertebral arteries from their origins to their confluence.

Describe the clinical features of the lateral medullary syndrome.

Describe the anatomy of aneurysms of the posterior inferior cerebellar artery.

### **Question 6**

Write notes on the management of:

1. Type 2 odontoid fracture in an 86 year old female
2. Wound infection following posterior spinal instrumented fixation
3. Post-traumatic syringomyelia of the cervical spinal cord
4. Progressive paraplegia due to thoracic disc prolapse

Candidate No.: «No»



**ROYAL AUSTRALASIAN COLLEGE OF SURGEONS**

**Neurosurgery  
Fellowship Examination**

First paper

**Multiple Choice Question Paper**

**Question 3 – 30 minutes**

**Wednesday 2 April 2008**

**Please read carefully:**

This paper contains 30 questions and you should attempt each one.

There are two types of questions. The rules for selecting the correct answer are shown at the beginning of each section.

Ordinary pencils should be used for marking the answer sheets. Pens are not permitted.

**The following section contains questions with one correct answer only.  
The numbers in this group run from 1 to 15.**



Each of the questions that follow consists of an incomplete statement or question followed by 5 suggested completions or answers. For each question select the ONE completion or answer which is most appropriate and blacken the circle corresponding (A, B, C, D, E) opposite the question number.

1. **The lateral aspect of the thigh has a cutaneous nerve supply derived from:**
  - A. L2 and L3
  - B. L3 and L4
  - C. L5, S1 and S2
  - D. S1 and S2
  
2. **The middle cerebral artery. - Which one of the following 5 statements is incorrect?**
  - A. lies in the lateral fissure, between frontal and temporal lobes
  - B. lies below the posterior perforated substance on its way to the lateral fissure
  - C. a series of 7 – 10 striate arteries arise to supply deep structures within the cerebellum
  - D. the striate arteries are joined by the recurrent artery of Heubner from the anterior cerebral artery
  - E. the striate arteries supply the basal nuclei and internal capsule
  
3. **Fourth Ventricle - which one of the following 5 statements is incorrect?**
  - A. The 3 openings in its roof are the two foramina of Luschka (lateral aperture) and a foramen of Magendie (median aperture)
  - B. It's roof is formed by the cerebellum
  - C. It's floor is formed by the pons and medulla
  - D. Some prominent features of the floor are the vagal triangle and the facial colliculus
  - E. The gracile and cuneate nuclei form its lateral boundary
  
4. **The dorsal scapular nerve:**
  - A. is the major supply of levator scapulae
  - B. runs dorsal to the rhomboid muscles
  - C. contains fibres from C6
  - D. receives fibres from the cervical plexus
  - E. is accompanied by descending scapula vessels

- 5. Which of the following statements is incorrect? A lateral ventricle of the brain**
- A. communicates with the third ventricle
  - B. has a posterior horn into which projects the choroid plexus
  - C. has a neurological cuboidal lining termed ependyma
  - D. is separated from its fellow by the septum pellucidum
  - E. has the head of the caudate nucleus bulging into it
- 6. Which of the following statements is incorrect? The tentorium cerebelli:**
- A. contains branches of the ophthalmic nerve
  - B. is related to the transverse sinus
  - C. lies close to the posterior inferior cerebellar artery
  - D. contains part of the trochlear nerve
  - E. is close to part of the posterior cerebral artery
- 7. Which of the following statements is incorrect? The squamous part of the temporal bone:**
- A. articulates with the sphenoid bone
  - B. is grooved by the middle temporal vessels
  - C. articulates with the disc of temporomandibular joint
  - D. is grooved by the middle meningeal vessels
  - E. articulates with the occipital bone.
- 8. Which of the following statements is incorrect? The vagus nerve:**
- A. contains fibres which supply all the muscles of the soft palate
  - B. conveys motor fibres for the larynx
  - C. is predominantly afferent
  - D. contains fibres which supply palatoglossus
  - E. contains fibres from the accessory nerve
- 9. Which of the following statements about the ophthalmic nerve is incorrect? The nerve:**
- A. supplies the conjunctiva
  - B. supplies the mucous membrane of the nasal cavity
  - C. supplies levator palpebrae superioris
  - D. has a frontal branch
  - E. is wholly sensory

**10. The oculomotor nerve supplies ALL BUT ONE of the following:**

- A. medial rectus
- B. superior oblique
- C. inferior rectus
- D. superior rectus
- E. inferior oblique

**11. A motor unit:**

- A. contains a sensory feedback loop
- B. was first described by Sr John Eccles
- C. consists of a gamma motoneuron and the muscle fibres it innervates
- D. nerve innervates more than 100 muscle fibres
- E. consists of an alpha motoneuron and the muscle fibres it innervates

**12. The vertebral artery:**

- A. traverses the foramina transversaria of all the cervical vertebrae
- B. arises from the common carotid artery
- C. is a component of the circulus arteriosus
- D. enters the skull through the foramen magnum
- E. gives rise to the posterior cerebral artery

**13. Oedema under the flexor retinaculum gives rise to a condition known as a carpal tunnel syndrome. The contents of the carpal tunnel includes all of the following EXCEPT the:**

- A. flexor digitorum superficialis
- B. flexor digitorum profundus
- C. flexor pollicis longus
- D. ulnar nerve
- E. median nerve

**14. The musculo-cutaneous nerve:**

- A. supplies brachioradialis
- B. terminates as the posterior interosseus nerve
- C. arises from the lateral cord of the brachial plexus
- D. always supplies all of the brachialis muscle
- E. contains fibres from C6,C7, and C8

**15. Hypoglossal nerve: which of the following statements is incorrect?**

- A. emerges from the medulla between olive and pyramid
- B. its nucleus is the floor of the 4<sup>th</sup> ventricle
- C. it is the main motor nerve for the muscles of the tongue
- D. leaves the cranial cavity through the jugular foramen
- E. is closely associated with a cervical nerve

**The following section contains questions which require you to relate two statements.  
There is only one correct answer.  
The numbers in this group run from 16 to 30.**

The questions that follow consist of an assertion or statement (S) in the left hand column, and a reason (R) in the right hand column. For each question, select the most appropriate response and blacken the circle according to the rules below.

- Blacken A if S is *correct* and R is *correct* and a valid explanation of S
- Blacken B if S is *correct* and R is *correct* **but is not** a valid explanation of S
- Blacken C if S is *correct* and R is *incorrect*
- Blacken D if S is *incorrect* and R is *correct*
- Blacken E if S is *incorrect* and R is *incorrect*

16. S. Dividing one chorda tympani will abolish secretion in the corresponding parotid gland

**BECAUSE**

R. the chorda tympani conveys postganglionic parasympathetic – fibres from the facial nerve

17. S. Fracturing the petrous temporal bone may result in asymmetrical frowning

**BECAUSE**

R. occipitofrontalis is supplied by greater occipital nerve

18. S. Irritating the external auditory meatus may induce reflex vomiting

**BECAUSE**

R. the vagus nerve has an auricular branch

19. S. Corneal ulceration may accompany herpes zoster lesions on the tip of the nose

**BECAUSE**

R. afferent fibres from both the cornea and the tip of the nose run in the maxillary nerve

20. S. The posterior third of the tongue is supplied by the glossopharyngeal nerves

**BECAUSE**

R. the posterior third of the tongue develops from the third pharyngeal pouch

21. S. If the superficial peroneal nerve is divided at the neck of the fibula there is anaesthesia over the anterolateral areas of the leg and foot but the medial side is not affected

**BECAUSE**

R. the medial side of the foot is supplied by a branch of the femoral nerve

22. S. Vascular lesions involving structures in the dorsolateral part of the medulla (lateral medullary syndrome) lead to loss of pain and thermal sense in the ipsilateral half of the face and contralateral half of the trunk and extremities

**BECAUSE**

R. both these systems of pain fibres are crossed and run within the same bundle of nerve fibres in the brain stem.

23. S. The vertebral artery may be damaged during an occipital retromastoid approach to the cerebello-pontine angle

**BECAUSE**

R. the vertebral artery passes posteriorly then medially around the superior articular facet of the C1 vertebra

24. S. Damaging the right V1th cranial nerve may give diplopia on looking to the left

**BECAUSE**

R. the abducens nerves supplies lateral rectus

25. S. A cervical rib may produce thoracic outlet syndrome compression

**BECAUSE**

R. when a cervical rib is present, the brachial plexus receives a larger contribution from T2 (i.e.; the plexus is post fixed)

26. S. Power grip is weakened in radial (musculospiral) nerve palsy

**BECAUSE**

R. the dorsi flexors of the wrist are weakened

27. S. In ulnar nerve damage at the elbow, power grip is weakened  
**BECAUSE**  
R. the interossei are the prime flexors of the metacarpo-phalangeal joints of the fingers
28. S. Injury to the anterior spinal artery in the cervical segment causes greatest ischaemia at the 8<sup>th</sup> cervical spine segment  
**BECAUSE**  
R. the nerve root arteries at the level of the first thoracic segment do not provide blood to the cervical part of the anterior spinal artery
29. S. Decerebrate rigidity results from a loss of descending inhibition on the pontine reticular formation  
**BECAUSE**  
R. The pontine reticular formation activates both alpha and gamma motoneurons which innervate the limb extensor muscles
30. S. The corneal reflex is abolished by division of the facial nerve  
**BECAUSE**  
R. the orbicularis oculi muscle receives bilateral innervation from the facial nuclei