



ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

FELLOWSHIP EXAMINATION

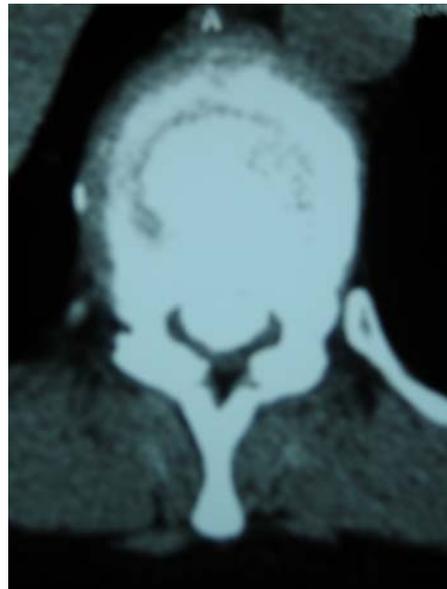
NEUROSURGERY

FIRST PAPER - 2 HOURS

MONDAY, 23 APRIL 2007

All Questions must be answered and are of equal value

Question 1



- a. Discuss the likely clinical findings in the 48 year old patient who presents with the above MRI and CT scan findings.
- b. Discuss the management options in detail, including an assessment of risks of surgery.

Question 2

Write short notes on the following topics:

- a. Heparin induced thrombocytopenia.
- b. Diagnosis and management of foot drop.
- c. Risks of embolisation of tumours and arteriovenous malformations.
- d. Ongoing long-term surveillance of patients after aneurysm surgery.
- e. Pain management of patients with malignant invasion of the brachial plexus.

Question 3

Neurosurgery MCQ Paper - **(30 questions - 30 minutes)**. Please follow instructions as detailed on accompanying MCQ Papers.



ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

FELLOWSHIP EXAMINATION IN NEUROSURGERY

SECOND PAPER - 2 HOURS

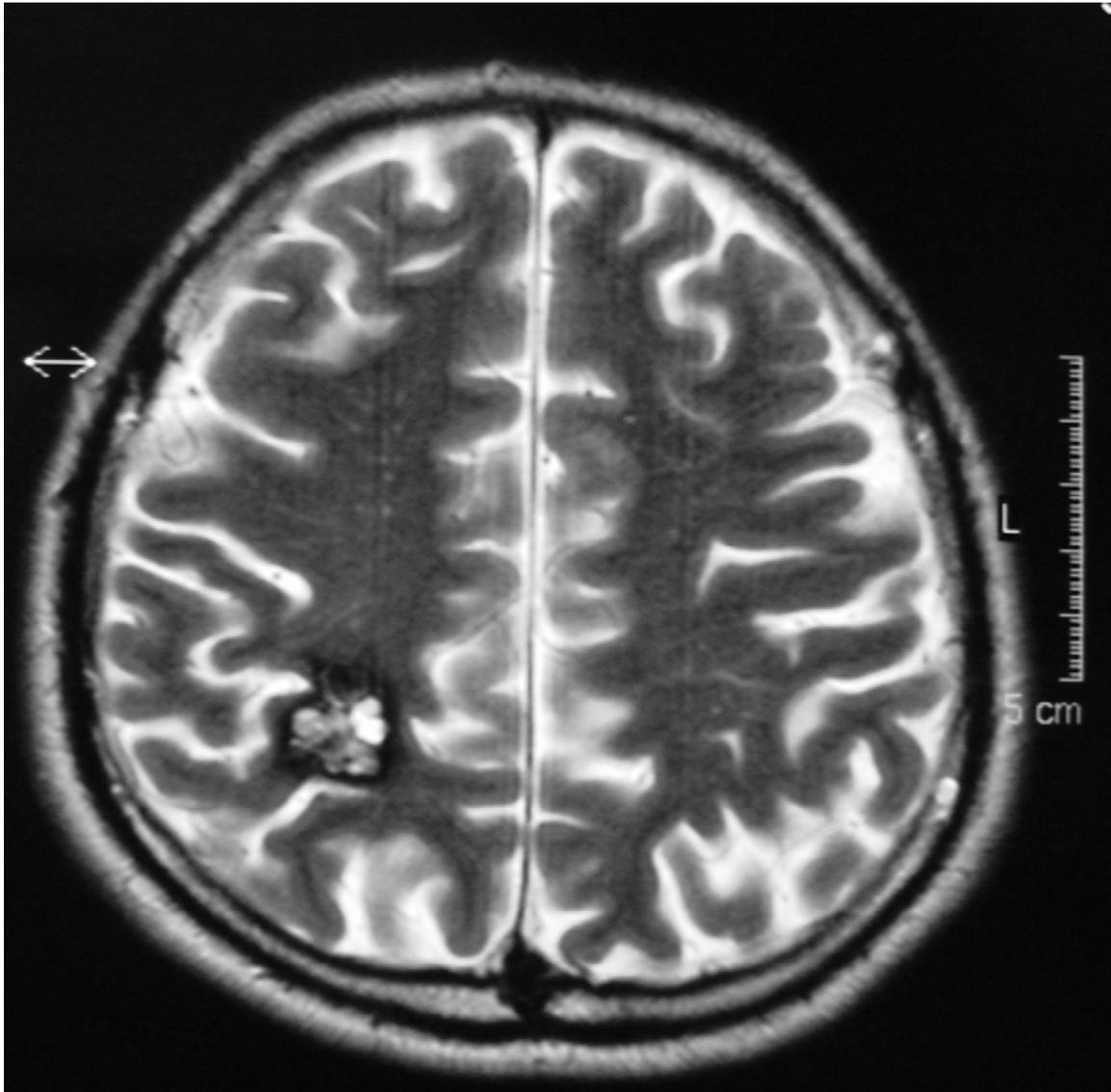
MONDAY, 23 APRIL 2007

All Questions must be answered and are of equal value

Question 4

Describe the structural and functional anatomy of the Hypothalamus. Give an account of the pathophysiology of complications following surgery in the vicinity of the hypothalamus.

Question 5



The above image is from Mrs U. Mrs U has been referred to you by her GP, Dr Smith. The referring letter states:

“Thank you for seeing Mrs U, Mrs U is a 28 year-old mother of one who is currently breast-feeding her 1 month-old son. During the last week of her term pregnancy she experienced jerking of her left arm that commenced in her fingers and marched up her left hand and arm. The episode lasted 5 minutes after which she was unable to move her left arm or fingers for 1 hour. This fully recovered and she is now normal. She has had no health issues and her pregnancy was uncomplicated.

As organised by the hospital she has just had an MRI showing a tumour. Could you please advise and manage accordingly.

PS Mrs U wishes to become pregnant again as soon as possible.”

- What do you think is the most likely diagnosis for this lesion and what do you think is the most likely mechanism for the neurological episode?
- Write brief notes on what are the management considerations in this case.
- Write down your recommendation for management in a letter and explain the risks, expectations and alternatives for treating Mrs U so that she can take it to her husband to read. Please use language that a lay person would understand.
- At consultation you found that Mrs U was neurologically normal. Write a letter to the referring doctor about Mrs U's consultation.

Question 6

Write notes on the following topics:

- a. Aetiology of Hydrocephalus.
- b. Colloid cyst as an incidental finding in a 53 year old male.
- c. Indications and contraindications for lumbar intervertebral fusion.
- d. Medulloblastoma.
- e. Status Epilepticus.



ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

FELLOWSHIP EXAMINATION

NEUROSURGERY

Surgical and Developmental Anatomy

FIRST PAPER

30 Minutes

MONDAY, 23 APRIL 2007

Multiple Choice Question Paper – Question 3

Please read carefully

The paper that follows 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.

THIS 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 cerebrum
 - 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 scapular 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:
- Contains fibres which supply all the muscles of the soft palate
 - Conveys motor fibres for the larynx
 - Is predominantly afferent
 - Contains fibres which supply palatoglossus
 - Contains fibres from the accessory nerve
9. Which of the following statements about the ophthalmic nerve is **incorrect**? The nerve:
- Supplies the conjunctiva
 - Supplies the mucous membrane of the nasal cavity
 - Supplies levator palpebrae superioris
 - Has a frontal branch
 - Is wholly sensory
10. The oculomotor nerve supplies **ALL BUT ONE** of the following:
- Medial rectus
 - Superior oblique
 - Inferior rectus
 - Superior rectus
 - Inferior oblique
11. A motor unit:
- Contains a sensory feedback loop
 - Was first described by Sir John Eccles
 - Consists of a gamma motoneurone and the muscle fibres it innervates
 - Nerve innervates more than 100 muscle fibres
 - Consists of an alpha motoneurone and the muscle fibres it innervates
12. The vertebral artery:
- Traverses the foramina transversaria of all the cervical vertebrae
 - Arises from the common carotid artery
 - Is a component of the circulus arteriosus
 - Enters the skull through the foramen magnum
 - Gives origin 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:
- Flexor digitorum superficialis
 - Flexor digitorum profundus
 - Flexor pollicis longus
 - Ulnar nerve
 - Median nerve
14. The musculo-cutaneous nerve:
- Supplies brachioradialis
 - Terminates as the posterior interosseus nerve
 - Arises from the lateral cord of the brachial plexus
 - Always supplies all of the brachialis muscle
 - Contains fibres from C6,C7, and C8
15. Hypoglossal nerve - which of the following statements is incorrect?
- Emerges from the medulla between olive and pyramid
 - Its nucleus is the floor of the 4th ventricle
 - It is the main motor nerve for the muscles of the tongue
 - Leaves the cranial cavity through the jugular foramen
 - Is closely associated with a cervical nerve

THIS 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 is 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
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17.

S.	Fracturing the petrous temporal bone may result in asymmetrical frowning	BECAUSE	R.	Occipitofrontalis is supplied by greater occipital nerve
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18.

S.	Irritating the external auditory meatus may induce reflex vomiting	BECAUSE	R.	The vagus nerve has an auricular branch
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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
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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
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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
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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.
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- 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 (ie; 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 8th 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