



PTS Reading Week Question Series 2020

Day 4- Neurology + Endocrinology

Andrew Maud

Neuro QUESTIONS / 35

1. A 40-year-old woman complains of moderate to severe pain in her head. The pain is only on one side and she says it feels like it's pulsating. She said she has suffered from this sort of pain for the past few years and experiences it 3-4 times a year, except this time it feels worse. She says the pain normally lasts for a few hours / all day and makes her feel sick. She says it doesn't affect her vision in any way.
What is this woman suffering from? (3)
2. A 20-year-old man presents to you with a temperature of 38.5 degrees, severe headache, decreasing consciousness and mental state with a GCS 13. On examination the patient has neck stiffness, as well as being unable to extend the knee when the hip is flexed.
 - a) What is the name given to not being able to extend the knee when hip is flexed? (1)
 - b) You investigate take blood cultures, give 2 further investigations that would be appropriate for this patient? (2)
 - c) Blood cultures come back and show a pink diplococci organism. What is the organism likely to be? (2)
 - d) What is the diagnosis? (2)
 - e) How would you treat this patient? (2)
3. *Peter shuffled into your GP clinic this morning complaining of an inability to do up his shirt buttons anymore. When you examined him you found many features particularly suspicious of a Parkinson's diagnosis.*
 - a) Besides shuffling gate, what symptoms are typical for a Parkinson's diagnosis? (3)
 - b) Explain the pathophysiology of Parkinson's including its involvement with the basal ganglia (3)
 - c) Give an example of a pharmacological treatment for Parkinson's and explain how it works. (2)
 - d) Give another condition that is associated with Parkinson's? (1)
4. A patient presents to A&E with a fixed dilated pupil. Which cranial nerve has been effected? (1)
5. Give 3 symptoms specific to a MCA stroke patient (3)

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6. What are 3 red flag symptoms associated with headaches?. (3)
7. Herniation of the brain through the foramen magnum (coning) is a potentially fatal side effect of increased intracranial pressure. Which drug can be given to patients to decrease this pressure? (2)
8. Give 3 signs for lower motor neurone disease and 3 signs for upper motor neurone disease. (6)

Endocrine QUESTIONS / 57

1. What is the difference between an endocrine gland and an exocrine gland? (2)
2. Acromegaly is the result of an overproduction of which pituitary hormone? (1)
3. Adrenal insufficiency can be divided into primary insufficiency and secondary insufficiency, give 2 examples of each. (4)
4. Describe 2 investigations appropriate for diagnosing a ptx. with Cushing's Disease (3)
5. Explain on a cellular level how hyperglycaemia leads to insulin secretion (5)
6. Give 3 blood tests with values that are diagnostic for T2 Diabetes Mellitus (6)
7. Give 2 examples of microvascular and macrovascular complications of DM (4)
8. Miranda, 35-year-old lady presents to the GP complaining of weight loss, feeling hot all the time, diarrhoea and a tremor. When you examine her pulse is 92 bpm. She has goitre, palmar erythema and bulging eyes.
 - a) What condition do you suspect Miranda has? (2)
 - b) Describe the levels of TSH, T3, T4 of a patient with this condition (3)
 - c) Name the thyroid autoantibodies also found on Miranda's blood test? (2)
 - d) What are 2 treatment options for Miranda? (2)
9. Give 5 signs of a patient with Hashimoto's Thyroiditis? (5)
10. What medication is used in the treatment of Hypothyroidism? (2)
11. Name the 2 hormones produced by the posterior pituitary gland (2)
12. What are the 2 main symptoms of patients with Diabetes Insipidus? (2)
13. Patient presents with palpitations, headache, episodic sweating. Blood tests reveal raised plasma catecholamines.
 - a) What condition does this ptx have? -2
 - b) Which cells produce catecholamines? -1
 - c) Where are these cells found? -2
14. What visual field defect would make you suspect a patient has a pituitary tumour? (2)



Neuro ANSWERS / 35

1. A 40-year-old woman complains of moderate to severe pain in her head. The pain is only on one side and she says it feels like it's pulsating. She said she has suffered from this sort of pain for the past few years and experiences it 3-4 times a year, except this time it feels worse. She says the pain normally lasts for a few hours / all day and makes her feel sick. She says it doesn't affect her vision in any way.

What is this woman suffering from?

- Migraine (2) without aura (1)

2. A 20-year-old man presents to you with a temperature of 38.5 degrees, severe headache, decreasing consciousness and mental state with a GCS 13. On examination the patient has neck stiffness, as well as being unable to extend the knee when the hip is flexed.

a) What is the name given to not being able to extend the knee when hip is flexed?

- Kernig's sign (1)

b) You investigate take blood cultures, give 2 further investigations that would be appropriate for this patient? (1 mark per correct answer- max 2)

- Lumbar Puncture (1): MC+S (1) WBC count (1) Protein (1) Pressure (1)
 Head CT (1)
 Bloods: FBC (1) CRP (1)
 Throat Swabs (1)
 Pneumococcal and Meningococcal PCR (1)

c) Blood cultures come back and show a pink diplococci organism. What is the organism likely to be?

- Neisseria (1) Meningitidis (1)

d) What is the diagnosis?

- Bacterial meningitis (1) / Meningococcal septicaemia (2)

e) How would you treat this patient in hospital? (1 mark per correct answer- max 2)

- Urgent antibiotics (1)
 Cefotaxime (1) IV (1)
 Consider Amoxicillin if ptx. Immunocompromised / over 55 (1)

3. Peter shuffled into your GP clinic this morning complaining of an inability to do up his shirt buttons anymore. When you examined him you found many features particularly suspicious of a Parkinson's diagnosis.

a) What features apart from a shuffling gait would conclude a Parkinson's diagnosis? (1 mark per correct answer- max 3)

- Resting tremor,
 Bradykinesia,
 Increased tone/rigidity (over entire radius of the joint).
 Stooped posture,
 Decreased arm swing,
 Decreased amplitude or accuracy of repetitive movements

b) Explain the pathophysiology of Parkinson's including its involvement with the basal ganglia. (1 mark per correct answer- max 3)

- Loss of dopamine (1) in the Substantia Nigra (1) of the pars compacta.

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- Normally dopamine stimulates movement (1) from the basal ganglia since it inhibits the inhibitory pathway of the striatum (1) therefore allowing movement.
 - In Parkinson's the amount of dopamine is reduced therefore there is less inhibition of the inhibitory pathway (1) therefore less movement.
- c) Give an example of a pharmacological treatment for this patient and explain how it works. (1 mark per correct answer- max 2) (Name of drug > Class accepted)
- Levodopa (1) natural precursor to dopamine- increases amount available to act on receptors (1)
 - Dopamine agonist- (1) act directly to stimulate dopamine receptors (1)
 - COMT inhibitors/MAO-B inhibitor (1) act to stop the breakdown of dopamine clearance, increased dopamine available.
- d) Give another condition that is associated with Parkinson's?
- Depression / Dementia (1)
4. A patient presents to A&E with a fixed dilated pupil. Which cranial nerve has been effected? (max 2 marks)
- Cranial Nerve 3 (1) / Oculomotor (2)
5. Give 3 symptoms specific to a MCA stroke patient (3) (1 mark per correct answer- max 3)
- Contralateral motor weakness of upper limbs (1) (no mark if not contralateral!)
 - Contralateral sensory loss of upper limbs (1) (no mark if not contralateral!)
 - Hemianopia (1)
 - Face Drop (1)
 - Aphasia / unable to understand speech (1)
 - Dysphasia / unable to generate speech (1)
6. Give 3 red flag symptoms associated with headaches. (1 mark per correct answer- max 3)
- New Headache with Hx of Cancer (1)
 - Cluster Headache (1)
 - Seizure (1)
 - Altered: consciousness (1) / memory (1) / confusion (1) / co-ordination (1)
 - Papilloedema (1)
7. Herniation of the brain through the foramen magnum (coning) is a potentially fatal side of effect of increased intracranial pressure. Which drug can be given to patients to decrease this pressure?
- Mannitol (2)
8. Give 3 signs for lower motor neurone disease and 3 signs for upper motor neurone disease. (6)
- | | |
|--|---------------------------------------|
| LMN: (max 3) | UMN: (max 3) |
| <input type="checkbox"/> Decreased tone/ flaccid (1) | Increased tone/ Spasticity, (1) |
| <input type="checkbox"/> Decreased Reflexes, (1) | Brisk reflexes, (1) |
| <input type="checkbox"/> Muscle wasting, (1) | Minimal muscle atrophy- weakness, (1) |
| <input type="checkbox"/> Fasciculations (1) | Babinski's sign (1) |



Endocrine ANSWERS/ 57

1. *What is the difference between an endocrine gland and an exocrine gland?*
 - ☐ Endocrine glands secrete substances/hormones directly into the bloodstream (1)
 - ☐ Exocrine glands secrete substances/hormones into a duct before they enter the bloodstream (1)

2. *Acromegaly is the result of an overproduction of which pituitary hormone?*
 - ☐ Growth Hormone (1) (not GH!)

3. *Adrenal insufficiency can be divided into primary insufficiency and secondary insufficiency, give 2 examples of each.*
 - ☐ Primary: (1 mark per correct answer, 2 max) Addison's, Surgical removal, Trauma, TB, Infarction, Invasion from tumour, ACTH resistance/blocking antibodies
 - ☐ Secondary: (1 mark per correct answer, 2 max) Steroids, Congenital, Corticotropin-releasing hormone deficiency, Trauma (fracture base of skull), Radiotherapy, Surgery, Neoplasm

4. *Describe 2 investigations appropriate for diagnosing a patient with Cushing's Disease*
 - ☐ 24hr urine collection (1)
 - ☐ Blood cortisol test (1) following dexamethasone (1)

5. *Explain on a cellular level how hyperglycaemia leads to insulin secretion (5)*
(1 mark per correct answer- max 5)
 - ☐ Hyperglycaemia leads to increase glucose uptake by cells (1)
 - ☐ Glucose metabolism leads to increased levels of ATP within cell (1)
 - ☐ Increased ATP causes K⁺ channels to close (1)
 - ☐ Causes depolarisation of cell membrane (1)
 - ☐ Ca²⁺ channels open and Ca²⁺ enters cell (1)
 - ☐ Increased Ca²⁺ in cell causes exocytosis of insulin-containing vesicles (1)
 - ☐ Insulin released by Pancreatic Beta cells / cells in Islets of Langerhans (1)

6. *Give 3 blood tests with values that are diagnostic for Diabetes Mellitus (6)*
 - ☐ Random plasma glucose (1) Score >11mmol/L (1)
 - ☐ Fasting plasma glucose (1) Score > 7mmol/L (1)
 - ☐ HbA1c (1) Score > 48 / 6.5% (1)

7. *Give 2 examples of microvascular and macrovascular complications of DM (4)*
 - ☐ Microvascular= Retinopathy (1) Neuropathy (1)
 - ☐ Macrovascular= CVD (1) Cerebrovascular disease (1) Peripheral artery disease (1)

8. *Miranda, 35 year old lady presents to the GP complaining of weight loss, feeling hot all the time, diarrhoea and a tremor. When you examine her pulse is 92 bpm. She has goitre, palmar erythema and bulging eyes.*
 - a) *What condition do you suspect Miranda has?*
 - ☐ Hyperthyroidism (1) / Grave's Disease (2)

 - b) *Describe the levels of TSH, T3, T4 of a patient with this condition.*
 - ☐ TSH low (1)
 - ☐ T3 raised (1) T4 raised (1)

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- c) *Name the thyroid autoantibodies also found on Miranda's blood test?*
- Thyroglobulin (1) and anti-thyroid peroxidase (1) antibodies
- d) *What are 2 treatment options for Miranda? (1 mark per correct answer- max 2)*
- Carbimazole (1)
 - Beta Blockers (1)
 - Radio Iodine therapy (1)
 - Thyroidectomy (1)
 -
9. *Give 5 signs of a patient with Hashimoto's Thyroiditis? (1 mark per correct answer- max 5)*
- Bradycardia (1)
 - Reflexes relax slowly (1)
 - Ataxia (1)
 - Dry/thin hair + skin (1)
 - Yawning/drowsiness/coma (1)
 - Cold hands (1)
 - Ascites (1)
 - Round puffy face (1)
 - Defeated Demeanour (1)
 - Immobile (1)
 - Round 'moon' face (1)
10. *What medication is used to treat hypothyroidism?*
- Synthetic Levothyroxine (2) / T4 (1)
11. *Name the 2 hormones produced by the posterior pituitary gland.*
- Antidiuretic Hormone / Vasopressin (1) (NOT ADH!)
 - Oxytocin (1)
12. *What are the 2 main symptoms of patients with Diabetes Insipidus? (2)*
- Polyuria (1)
 - Polydipsia (1)
13. *Patient presents with palpitations, headache, episodic sweating. Blood tests reveal raised plasma catecholamines.*
- a) *What condition does this patient have?*
- Pheochromocytoma (2)
- b) *Which cells produce catecholamines?*
- Chromaffin cells (1)
- c) *Where are these cells found?*
- Adrenal Glands (1) / Adrenal Medulla (2)
14. *What visual field defect would make you suspect a patient has a pituitary tumour? (2)*
- Bitemporal (1) hemianopia (1)



Summary Page

Set Goals.

Work Smart to achieve those goals.

Reflect. Adapt. Succeed.

Neuro	Theme	Correct?
1	Migraine	
2	<i>Meningitis:</i>	-----
▪ 2a)	Meningitis Sign	
▪ 2b)	Meningitis Ix	
▪ 2c)	Meningitis Microbiology	
▪ 2d)	Meningitis Diagnosis	
▪ 2e)	Meningitis Tx	
3	<i>Parkinson's:</i>	-----
▪ 3a)	Parkinson's symptoms	
▪ 3b)	Parkinson's pathophysiology	
▪ 3c)	Parkinson's treatment	
▪ 3d)	Parkinson's Associations	
4	Phase 1- Cranial Nerves	
5	Stroke MCA Symptoms	
6	CA red flags	
7	Raised ICP	
8	Motor Neuron Disease	

Total /35

UPLOAD YOUR SCORE TO GOOGLE FORM

Key area to focus on next:

Endo	Theme	Correct?
1	Endo/Exocrine Glands	
2	Acromegaly	
3	Adrenal Insufficiency	
4	Cushing's Disease	
5	Insulin Secretion	
6	T2 DM Diagnosis	
7	T2 DM Complications	
8	<i>Graves Disease</i>	-----
▪ 8a)	Symptoms Grave's	
▪ 8b)	Graves TFTs	
▪ 8c)	Graves Auto-antibodies	
▪ 8d)	Graves Tx	
9.	Hashimoto's Signs	
10.	Hypothyroidism Tx	
11.	Pituitary Hormones	
12	Diabetes Insipidus	
13	<i>Phaeochromocytoma</i>	-----
▪ 13a)	Symptoms	
▪ 13b)	Cells involved	
▪ 13c)	Location of cells	
14.	Pituitary Tumor	

Total /57

UPLOAD YOUR SCORE TO GOOGLE FORM

Key area to focus on next:

****GOOGLE FORM → UPLOADING SCORES**** <https://forms.gle/LfqQnKPFJdTWYg5W8>

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