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(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2020/ 2021 **ACADEMIC YEAR**

MAIN EXAM

FOR THE DEGREE
OF
BACHELOR OF OPTOMETRY

COURSE CODE: BOV 323

COURSE TITLE: NEURO – EYE DISEASES AND GLAUCOMA

DATE: 20/04/2022 **TIME:** 3-5PM

INSTRUCTIONS TO CANDIDATES
Answer all questions

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

SECTION A (40 MARKS)

1. The administration of topical ocular miotic (cholinergic) therapy in an eye with active intraocular inflammatory disease (uveitis) will not increase which of the following?

a. Posterior synechia formation
b. Uveoscleral outflow
c. Pain
d. Inflammation

2. Of the following, which would be the best initial medical agent for a patient with severe asthma and newly diagnosed glaucoma?

a. Carteolol (Ocupress)
b. Betaxolol (Betoptic)
c. Timolol (Timoptic, Betimol)
a. Dorzolamide (Trusopt)

3. A patient presents 2 years after a trabeculectomy during which mitomycin C was administered. She has had pain, redness, and discharge for 1 day in that eye. Examination reveals a visual acuity of 20/200, applanation tension of 4 mm Hg, mucopurulent discharge, small bleb leak, and extensive cellular reaction in the anterior chamber with a small hypopyon. The lens and vitreous are clear. What would the most appropriate treatment be at this time?

a. Intravenous antibiotic therapy
b. Pars plana vitrectomy with intraocular antibiotic injection
c. Topical fortified antibiotic therapy
d. Injection of antibiotics the anterior chamber

4. In an eye with increased episcleral venous pressure, which of the following medical agents would be expected to have the least intraocular pressure-lowering effect?

a. Topical miotic (cholinergic) therapy (pilocarpine, carbachol, echothiophate iodide)
b. Beta-adrenergic antagonist (betaxolol, carteolol, levobunolol, metipranolol, timolol)
c. Topical or oral carbonic anhydrase inhibitor (acetazolamide, methazolamide, dichlorphenamide, dorzoloamide)
d. Topical prostaglandin agent (latanoprost)

5. Medical management of glaucoma associated with inflammatory ocular disease (uveitis) and active intraocular inflammation would not include which of the following?

a. Beta blocker
b. Pilocarpine
c. Cholinergic antagonist (cycloplegic agent)
d. Topical corticosteroid

6. A 78-year-old man experienced unilateral sudden loss of vision 1 year previously. Currently, he complains of severe pain in that eye. Examination reveals no light-perception vision, intraocular pressure of 72 mm Hg, iris neovascularizatioll, and evidence of a central retinal vein occlusion. What would the least helpful topical therapeutic agent be at this time?

a. Beta blocker
b. Corticosteroid
c. Cholinergic (miotic)
d. Cycloplegic

7. A 65-year-old man with severe proliferative diabetic retinopathy underwent a very heavy laser photocoagulation treatment session by your retinal associate 1 day previously. Today, the patient presents with mild pain, blurred vision, and an intraocular pressure of 45 mm Hg. Your retinal associate has already treated the patient with a topical beta blocker and oral carbonic anhydrase inhibitor and has referred him to you for further management of elevated intraocular pressure. The patient has no previous history of glaucoma and no evidence of iris neovascularization. On your examination, the anterior chamber appears very shallow and the fellow eye has a deep anterior chamber. What would the most appropriate initial management step be?

a. Perform a laser iridotomy
b. Perform a laser iridoplasty
c. Give a topical cycloplegic agent
d. Perform a trabeculectomy

8. Which of the following drugs has been designated by the FDA to be safest during pregnancy?

a. Dorzolamide (Trusopt)
b. Latanoprost (Xalatan)
c. Brimonidine (Alphagan)
d. Timolol (Timoptic)

9. Two years after a successful filtering procedure (full-thickness sclerectomy), a patient complains of pain, tearing, and blurred vision for 2 days. The visual acuity is 20/50, the intraocular pressure is 4 mm Hg, the bleb is flat, and there is a rare cell in the anterior chamber. What is the most likely explanation of these symptoms and signs?

a. Ciliary body detachment
b. Endophthalmitis
c. Bleb leak
d. Retinal detachment

10. A 59-year-old man complains of decreased vision immediately upon emerging from anesthesia following cardiac bypass surgery. On examination, the patient reports bare light perception vision OU. External examination, extraocular movements, pupillary reaction, and examination are all normal. Which of the following is the diagnostic procedure of choice?

a. Carotid duplex study
b. Erythrocyte sedimentation rate
c. MRI or CT scan
d. Fluorescein angiogram

11. A 68-year-old man complains of severe, brief, episodic, electric shock-like pain on the left side of his face, mostly over the cheek. It may be precipitated by chewing or shaving. He is otherwise asymptomatic. Ophthalmologic and neurologic evaluation are normal. What is the most likely diagnosis?

a. Temporal arteritis
b. Postherpetic neuralgia
c. Cavernous sinus aneurysm
d. Trigeminal neuralgia

12. A 32-year-old woman complains of intermittent diplopia, usually lasting about half an hour when she first wakes up in the morning, with a few months' duration. She also notes some irritation and pressure around her eyes. Acuity, color plates, and visual fields are all normal. Externally, the right upper eyelid is at the upper limbus. The left covers the upper 2 mm of the cornea. There is slight injection OU with some chemosis on the left. Versions are normal, but cover testing demonstrates a small left hypertropia (or right hypotropia) on up gaze. Corneal sensation is normal. Which of the following is the most appropriate next test?

a. Acetylcholine receptor antibody test
b. Thyroid function test
c. FTA-ABS
d. MRI of the brain

13. A 64-year-old hypertensive patient complains of difficulty reading. He states, "Things are blurry, I sometimes lose my place when reading, and I still see things after I've looked away." Examination demonstrates acuity of 20/20 OU with normal motility, pupillary, and fundus evaluation. What would the most appropriate initial evaluation be?

a. Psychiatric consultation
b. Visual field test
c. Erythrocyte sedimentation rate
d. Fluorescein angiogram

14. A 20-year-old nurse in an ophthalmology clinic complains of right-sided brow ache. Examination of both eyes is normal, except for the presence of a 1.5 mm, nonreactive right pupil to light or near stimuli. The pupil does not dilate in darkness. The left pupil is 4 mm and briskly reactive. The patient has no ptosis and normal ocular motility. The anterior chamber has no cell and flare. What is the most likely diagnosis?

a. Horner's syndrome
b. Argyll Robertson pupil
c. Adie's pupil
d. Instillation of miotic agent

15. A 15-year-old girl experiences blurry vision OS and a frontal headache. Her acuities are 20/20 OD and 20/60 without correction OS. With -2.00 D refraction she sees 20/20 OS. In the light, pupils measure 6 mm OD and 1 mm OS, and in the dark they measure 7 mm OD and 1 mm OS. The right pupil is briskly reactive; the left does not react to light or near stimuli. Her examination is otherwise unremarkable. What type of drop did she use?

a. Prostaglandin inhibitors
b. Parasympathomimetic
c. Sympathomimetic
d. Alpha adrenergic agonist

16. A 70-year-old woman reports double vision and "trouble with my eyes." This apparently developed suddenly, a few months ago. Visual acuity, color vision, and threshold visual field evaluation are normal. Extraocular movements show no adduction OD and no abduction or adduction OS; motility is otherwise normal. Pupillary evaluation is normal. There is no ptosis. External examination is unremarkable. Which of the following tests is most indicated?

a. MRI of the parasellar area
b. Aan edrophonium (Tensilon) test
c. MRI of the head/pons
d. CT of the orbit

17. An emergent consultation is requested on a comatose man with significant periocular trauma to the right eye. A CT scan of the head is essentially normal. The patient's pupils are 8 mm OD, 4 mm OS; the right pupil does not react to direct light. The right eye is exodeviated and has complete ptosis, and oculocephalic maneuver indicates that the right eye does not cross the midline in the field of action of the right medial rectus muscle. There is no enophthalmos or proptosis. Intraocular pressures are 19 mm Hg OD and 12 mm Hg OS. Both fundi are unremarkable. For the purpose of guiding emergent treatment, which of the following is the most appropriate test to perform?

a. Forced duction of the right eye A CT scan of the orbits
b. A pattern visual evoked response
c. Examination of the relative magnitude of the pupillary response of the left eye, when the left and then the right eye is illuminated
d. A pattern visual evoked response

18. A 24-year-old woman complains of episodes of blurred vision with flashing lights that progress over approximately 30 minutes. These are followed by a throbbing headache and resolution of her visual symptoms. A complete ophthalmologic evaluation, including visual fields, is normal. What is the most likely diagnosis?

a. Superior oblique myokymia
b. Classic migraine
c. Transient ischemic attack
d. Cluster headache

19. A 24-year-old woman complains of episodes of blurred vision with flashing lights that progress over approximately 30 minutes. These are followed by a throbbing headache and resolution of her visual symptoms. A complete ophthalmologic evaluation, including visual fields, is normal. The most likely diagnosis was classic migraine. On a follow-up visit, the patient notes eight additional episodes. In all cases, she reports, the blur and scintillations occurred only in the left visual field, with headaches on the right side. She denies any other accompanying neurologic symptoms. Which of the following is the most appropriate course of action?

a. Observation only
b. Echocardiogram Carotid
c. Ultrasound
d. MRI

20.A 22-year-old woman with acute visual loss in the right eye and pain with eye movement from optic neuritis due to multiple sclerosis is most likely to have which one of the following clinical findings?

a. Optic disc edema with macular star
b. Uveitis with vitritis
c. Relative afferent pupillary defect
d. Anisocoria greater in light

21.What is the most likely diagnosis in a 48-year-old man who awakens after cardiac bypass surgery with decreased vision in the right eye, a right relative afferent pupillary defect, and normal funduscopy?

a. Optic neuritis
b. Cilioretinal artery occlusion
c. Occipital stroke
d. Posterior ischemic optic neuropathy

22. A 335-pound 25-year-old woman comes in on a Monday for evaluation of bilateral synchronous visual obscuration's lasting 15 seconds. These have been occurring for 3 weeks. She has no other medical history and is on no medications. Her examination is normal except for enlarged blind spots on visual field testing and marked bilateral papilledema. What is the most reasonable next step in her management?

a. Start her on acetazolamide 500 mg q6h, and refer her to a neurologist on Tuesday.
b. Obtain an MRI that day; if it is negative, begin her on acetazolamide 500 mg q6h and see her in 3 days to determine whether the papilledema has improved.
c. Start her on acetazolamide 500 mg q6h, and refer her to a neurologist on Thursday.
d. Obtain an MRI on her that day; if it is negative, arrange for a spinal tap shortly thereafter.

23.A 62-year-old woman complains that "everything is jumping." Visual acuity, color vision, and visual fields are normal. Motility evaluation shows full movement. You note a coarse, downward beating of both eyes, worse on downgaze, especially laterally. What is the anatomic site most likely to be involved?

a. Medial longitudinal fasciculus
b. Cervicomedullary/cerebellar area
c. Parasellar/third ventricle
d. Dorsal midbrain ventricle

24.A patient involved in a motor vehicle accident had loss of consciousness for 10 minutes. She has an abduction deficit of the right eye, with only about 10% of normal amplitude of abduction beyond the midline remaining. The anterior examination is normal; exophthalmometry readings are symmetric. Which of the following would be consistent with the presence of a right sixth-nerve palsy without an entrapped medial rectus?

a. Ability to induce full abduction OD with oculocephalic maneuver
b. Restriction of the right eye on forced abduction, no force generated with attempted abduction on forced generation test
c. No restriction on forced abduction OD, diminished force generated with attempted abduction on forced generation test
d. Exodeviation on right gaze

25.A 67-year-old Asian man consulted you 3 months ago with an isolated right sixth-nerve palsy that had been present for 3 months. His CT scan with contrast of the head, edrophonium (Tensilon) test, glucose tolerance test, sedimentation rate, and serologies for Lyme disease and syphilis were normal. He now presents with a left sixth-nerve palsy to accompany the persistent right sixth-nerve palsy. The results of the rest of the examination remain normal. There is no proptosis. A spinal tap performed by his neurologist 1 day earlier was normal. Which of the following is the least important in terms of his management plan?

a. Perform another spinal tap in a few days
b. Obtain an otolaryngology consult
c. Obtain MRI of the base of the brain
d. Obtain cervical carotid ultrasonography

26.Which one of the following conditions would most likely be found in a patient with optic disc edema, macular exudate, and vitritis?

a. Hypertensive retinopathy
b. Nonarthritic anterior ischemic optic neuropathy
c. Papilledema
d. Optic neuritis

27.Papilledema would be an expected cause of visual loss in a patient with which of the following findings?

a. Meningeal enhancement from intracranial hypotension
b. Bilateral optic nerve sheath enhancement
c. Pituitary apoplexy
d. Hydrocephalus from aqueductal stenosis

28. Which of the following findings would be most suggestive of an optic neuropathy in a 50-year-old woman with decreased vision in the right eye?

a. Decreased visual acuity
b. Decreased colour vision
c. Central scotoma
d. Relative afferent pupillary defect

29.Temporal arteritis is diagnosed on biopsy when which of the following findings is present?

a. Lymphocytes and plasma cells
b. Intimal hyperplasia
c. Calcific plaque with arterial occlusion
d. Granulomatosis inflammation with or without giant cells

30.Compared to patients who have optic neuritis, patients with neuroretinitis are at low risk for developing which of the following conditions?

a. Optic disc swelling associated with exudates
b. Multiple sclerosis
c. Lyme disease
d. Permanent vision loss

31. A 30-year-old female complains of a continuous quivering of the upper and lower lids around her right eye over the last 2 weeks. On examination, there is a continuous undulation in the right orbicularis oculi that trails off into adjacent facial muscles. There is also an asymmetrically prominent nasolabial fold on the right, and her palpebral fissure is narrower on the right side than on the left. She has no facial weakness. Ophthalmoscopy reveals that the patient has bilateral temporal pallor and nerve fibre thinning in both eyes. Her saccadic eye movements show mild adduction slowing with abductor overshoot. What is the most likely diagnosis?

a. Mitochondrial myopathy
b. Guillain-Barre syndrome
c. Brainstem glioma
d. Multiple sclerosis

32. Substernal chest pain in a patient with anterior ischemic optic neuropathy (AION) caused by giant cell arteritis could indicate what condition?

a. Hepatomegaly
b. Coronary arteritis
c. Toxic steroid levels
d. Referred pain from carotid arteritis

33. A patient with temporal arteritis, an elevated sedimentation rate and abnormal C-reactive protein, Often has what other laboratory abnormality?

a. Hypercalcemia

b. Thrombocytosis
c. Erythrocytosis
d. Elevated angiotensin-converting enzyme

34. A 40-year old woman develops blurred vision at near in the left eye. She has a mid-dilated pupil that reacts only to near stimulus. What is the most likely diagnosis?

a. Third cranial nerve palsy
b. Accommodative insufficiency
c. Adie's pupil
d. Accommodative spasm

35. A 40-year-old man is experiencing a headache associated with visual scintillations that is occurring with increasing frequency several times per week, what would the appropriate step be?

a. Offer an oral beta-blocker as therapy.
b. Obtain an MRI scan.
c. Review the patient's history for environmental precipitants.
d. Check the patient's sedimentation rate.

36. A 10-year-old child has open angle glaucoma and asthma. Which of the following adrenergic agents is most appropriate for managing this patient's glaucoma?

a. Timolol
b. Brimonidine
c. Apraclonidine
d. Betaxolol

37. Under anesthesia, a 6-month-old boy is found to have corneal diameters of 13 mm OD and 12.5 mm OS. Significant bilateral corneal edema is also present. Intraocular pressures (IOPs) are 33 mmHg OD and 29 mmHg OS. What would be the preferred first-line treatment?

a. Cycloablation
b. Goniotomy
c. Trabeculotomy
d. Trabeculectomy with mitomycin-c

38. A 9-year-old boy with sickle cell trait is diagnosed with a 5-mm hyphema OD. He is coooperative during the examination, and intraocular pressures are 39 mm Hg OD and 12 mm Hg OS. What is the preferred first-line treatment?

a. Daily monitoring with sedatives
b. Eye examination under anaesthesia
c. Pressure-lowering medications
d. Daily monitoring with topical corticosteroids

39. A 60-year-old myope with early cataracts and enlarged cup-to-disc ratios of 0.6 OU is found to have an abnormal Humphrey visual field test OS. He has no other risk factors for glaucoma. What is the most appropriate next step for this patient?

a. Repeat visual fields
b. Diurnal curve (serial tonometry)
c. Monocular trial of latanoprost
d. Laser trabeculoplasty

40. A 63-year-old woman reports sudden onset of jagged lines in the right peripheral vision. She has experienced 3 episodes in the past month, which lasted approximately 10–20 minutes. She denies headaches and any history or family history of migraines. The most likely diagnosis is

a. vertebrobasilar insufficiency
b. occipital AVM
c. migraine variant
d. posterior vitreous detachment

SECTION B (30 MARKS)

1. Match the physical signs (a-d) with the most likely diagnoses (A-N) listed below: (4 marks)

(a)

A. Anton's syndrome
B. Kennedy-Foster's syndrome
C. Waadenburg's syndrome
D. Wallenberg's syndrome
E. Millard-Gubler's syndrome
F. Gradenigo's syndrome
G. Weber's syndrome
H. Raymond's syndrome
I. Benedikt's syndrome
J. Parinaud's syndrome
K. Nothnagel's syndrome
L. Tolosa-Hunt's syndrome
M. Foville's syndrome
N. Möebius's syndrome

a. A 50-year-old hypertensive man developed a sudden onset slurring of speech, vomiting and a right Horner's syndrome. He also had problem withstanding up straight. Ocular examination also revealed a horizontal jerky nystagmus.

b. A 60-year-old hypertensive man developed a sudden onset right complete right third nerve palsy and a left hemiplegia.

c. A 30-year-old man developed a right sixth nerve palsy and facial pain. CT scan revealed opacity of the mastoid air cells.

d. A 65-year-old diabetic woman developed a sudden-onset right facial palsy and a contralateral hemiplegia. Examination revealed a right abduction deficit.

Match the following findings (a-d) with the most likely cause or site of lesion (A-N) listed below. (4 marks

(b)

A. orbital apex
B. dilatation of the third ventricle
C. dilatation of the fourth ventricle
D. cavernous sinus
E. red nucleus
F. cerebral peduncle
G.superior orbital fissure
H. inferior orbital fissure
I. cervicomedullary junction
J. ventral pons
K. dorsal pons
L. occipital lobe
M. pituitary gland
N. hypothalamus

a. A 24-year-old girl developed morning headache and a bitemporal hemianopia. CT scan revealed dilated lateral ventricles and a space-occupying lesion in the brain stem. No lesions were seen in the pituitary or the hypothalamus region. What may be responsible for the visual field defect?

b. A 75-year-old woman developed a sudden onset right third nerve. In addition, she also
developed a left involuntary tremor.

c. A 80 year-old man developed a right facial palsy and a right horizontal gaze palsy. In addition, he had a right Horner's syndrome and loss of sensation to the right face.

d. A 32-year-old woman developed a painful right eye and proptosis. Examination revealed normal vision but the movement of the right eye is restricted and the right forehead had decreased sensation to touch and pain. The left eye examination was normal.

c. Which syndrome includes cranial nerve III palsy, contralateral decreased sensation, and contralateral tremor in the extremities? (1 mark) with a well labelled diagram show the location of the lesion in the midbrain. (1 marks)

2. A 38-year old white female presented with left acute vision loss & painful eye movement. On examination, VAs were 20/25, 20/200, 2+ APD

   a. Apart from testing for RAPD what other test are relevant to the case (2 marks)
   b. What is the next recommended test to send for to help in the diagnosis and why (2 marks)

c. Assuming on Funduscopy there is presence of hyperaemia of the disc and a macular scar, some partitioners think that that may be a `lesser evil` why? (2 marks)
d. On Funduscopy nothing was seen out of the ordinary meaning there was no abnormality detected only a slight oedema of the disc what could be the diagnosis based on etiological and anatomical classification of the disease? (2 marks)

e. What is the management and the prognosis (2 marks)

3. a. Briefly discuss the anatomical and etiological classification of the optic neuritis (5 marks)

b. Briefly discuss some of the signs of optic nerve atrophy (5 marks)

BY RAGS
GOOD LUCK