August, 2015

STATE MEDICAL FACULTY OF WEST BENGAL

Final Examinations
for Diploma in Perfusion Technology : DPfT

Paper – I
PERFUSION EQUIPMENTS, CLINICAL APPLICATION OF BYPASS TECHNIQUES

Time – 3 hours | Full Marks – 80

Group – A

Q-1) Write the correct Answer: **10x1 = 10**

i) Del nido is one kind of:
- a) Oxygenator
- b) Centrifugal Pump
- c) Cardioplegia
- d) Balanced salt solution

ii) Total bypass means:
- a) Bypass runs in full flow
- b) Caval snares are tightened
- c) Heart is arrested completely
- d) All of the above

iii) Most important cause of hemolysis during CPB:
- a) Roller pump
- b) Oxygenator
- c) Cardiotomy suction
- d) Blood transfusion reaction

iv) For a 3 years old paediatric patient the blood flow rate during CPB will be:
- a) 3.5xBSA
- b) 2.8xBSA
- c) 2.4xBSA
- d) 2.0xBSA

v) Causes of Aortic Cannula High Line Pressures:
- a) Kink in arterial Cannula or line
- b) Cannula too small
- c) Aortic dissection
- d) All of the above

vi) Temperature for moderate hypothermia is:
- a) 32 - 37°C
- b) 28 - 31°C
- c) 18 - 28°C
- d) 00 - 18°C

vii) Regarding retrograde Cardioplegia – which is not correct?
- a) Pressure 30-50 mmHg
- b) Flow 200 ml/min
- c) Introduce the coronary sinus
- d) Introduce the coronary Ostia

viii) Intra-Aortic Balloon pump utilizes following gas to inflate the balloon:
- a) CO_2
- b) O_2
- c) Nitrogen
- d) Helium

ix) Antegrade Cardioplegia is usually given with a line pressure of about:
- a) 80-100 mm of Hg
- b) 125-150 mm of Hg
- c) 150-200 mm of Hg
- d) None of the above

x) All are true of a vent line, except:
- a) Decompresses
- b) Always used
- c) Prevents warming of the heart
- d) A fine needle placed proximally prevents line collapse

Contd……..P2/

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Paper – I
PERFUSION EQUIPMENTS, CLINICAL APPLICATION OF BYPASS TECHNIQUES

Group – B

Answer any Two from Question No. 2 to 5 and any Four from Question No. 6

2x20 = 40

Q2. What are the things to be checked –
a) Before going on bypass, b) Before termination of bypass? How will you monitor the various parameters during bypass? How can you maintain sufficient anaesthesia during CPB?
5+5+5+5 = 20

Q3. Describe the Cardioplegia delivery system you are using at your center. Mention the amount of initial and repeat doses of Cardioplegia. What are the compositions and temperature of cold and warm blood Cardioplegia? Mention the causes preventing arrest of heart after Cardioplegia is given.
7+3+5+5 = 20

Q4. Draw and label a circuit of Cardiopulmonary bypass for an adult patient, undergoing mitral valve replacement.
10+10 = 20

Q5. What is the role of heparin and Protamine during CPB? Explain Protamine reaction. Enumerate blood conservation technique.
10+5+5 = 20

Group – C

Q6. Write short notes on (**Any Four**):- **4 x 7½ = 30**

a) Oxygen free radical
b) Retrograde Cerebral perfusion
c) Different methods of venting the left heart
d) Dearing of heart during an operation under CPB
e) Hot shot.

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Final Examinations
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Paper – II
POST OPERATIVE INTENSIVE CARE UNIT MANAGEMENT, OCCUPATIONAL ASPECTS OF PERFUSION

Time – 3 hours | Full Marks – 80

Group – A

Q-1) Write the correct Answer: **10x1 = 10**

i) Indicators of inadequate perfusion are all, except:
- a) Low urine volume
- b) Alkalosis in blood gas report
- c) Rising level in oxygenator
- d) Mean systemic blood pressure <40mm Hg

ii) About 'Hot shot':
- a) Administered after release of cross-clamp
- b) Helps in regaining cardiac function
- c) Has a temperature of 42°C
- d) Is rich in potassium

iii) All are inotropes, except:
- a) Isoprenaline
- b) Amiodarone
- c) Amrinone
- d) Dobutamine

iv) Pressure transducer should be placed at the level of:
- a) RA
- b) LA
- c) RV
- d) Suprasternal notch

v) Dose of heparin to initial CPB:
- a) 0.5 – 1 mg/kg
- b) 1 – 2 mg/kg
- c) 2 – 3 mg/kg
- d) 3 – 4 mg/kg

vi) Most common arrhythmias after cardiac operation:
- a) AF
- b) VF
- c) Heart Block
- d) Atrial flutter

vii) During rewarming phase in an adult the patient perfusate temperature gradient:
- a) 5°C
- b) 10°
- c) 15°C
- d) 20°C

viii) To run CPB on a baby of 6 kg. body weight, all are true, except:
- a) Venous tubing should be of ½ inch diameter
- b) Blood flow rate 3.0 Lm^2/min x BSA
- c) Oxygenator priming volume should be less than 200ml
- d) Arterial tubing size should be of ¼ inch diameter

ix) A two stage Atrial Cannula may be used in a patient with:
- a) TGA
- b) Aortic valve replacement
- c) Tricuspid valve replacement
- d) Sinus venous type of ASD

x) The advantages of membrane oxygenator over bubble ones include all, except:
- a) Better gas exchange
- b) Less micro emboli
- c) Less cost
- d) Less chance of gross air embolism

Contd.....P2/

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Paper – II
POST OPERATIVE INTENSIVE CARE UNIT MANAGEMENT, OCCUPATIONAL ASPECTS OF PERFUSION

Group – B

Answer any Two from Question No. 2 to 5 and any Four from Question No. 6

2x20 = 40

Q2. What are the side effects of CPB and how will you prevent it? Define reperfusion injury, rewarming, washout acidosis and heparin rebound.

10+2½+2½+2½+2½ = 20

Q3. How does a perfusionist protect himself from electrical hazards and HIV infection during his professional work? Compare different methods of sterilization. Discuss about complication of uses of donor blood and its prevention.

5+5+5+5 = 20

Q4. What are the parameters to be checked post-operative period after cardiac surgery? What are the criteria's to be fulfilled before weaning from mechanical ventilation? How can you calculate – i) amount of $NaHCO_3$ needed to correct metabolic acidosis, ii) BSA, iii) Flow rate on CPB, iv) dose of Protamine?

5+5+2½+2½+2½+2½ = 20

Q5. Describe the method of terminating bypass. Mention the priming composition used in your centre for an adult and paeditric patient. How will you calculate the haematocrit during CPB?

5+5+5+5 = 20

Group – C

Q6. Write short notes on (**Any Four**):- **4 x 7½ = 30**

a) St. Thomas Cardioplegia
b) Perfusion chart
c) ACT
d) Cold agglutinin and CPB
e) Arterial Filter.

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