Dysrhythmias in the operating room and intensive care unit

Mohamed Samy Seddik Hamed

The electrophysiological properties of the heart includecardiac iapulse foraation and conductio., naaely,rhythaicity, excitability and conductivity. Cardiacdysrhythaias aay result froa alteration in t 0 or threeelectrophysiological properties.The incidence of intra-operative dysrhyt aias varygreatly froa 16 to 62 percent. They are aost c aaonly encounteredat the tiaes of endotracheal intu ation andextubation. Patients with preexisting cardiac di ease had ahigher incidence of ventricular dysrhythaias than didpatient without heart disease.Patients with preexisting disease such a: ischaeaicheart disease, hypertension, rheuaatic and congel ital heartdisease are aost likely to have disturbance of rh:tha duringanaesthesia. Also, patients with endocrine disordl rs such asthyrotoxicosis and phaeochroaocytoaa will cause :ardiovascularirregularities.In anaesthetic practice cardiac dysrhythaias are aostfrequently associated with adverse changes of ver ;illation,notably hYPoxia hypercarbia and hypocapnia. Alse disturbancesof acid-base balance, both aetabolic ae idosis andalkalosis are associated with abnoraalities in t~ cardiacrhytha.Variation in the intracellular and extrace lular concentrationof certain electrolytes such as potassiua,sodiua, calciua and aagneslua aay result B cardiacIrregularities.Extreaes of teaperature, both hypotherala an. aalignanthyperpyrexia are associated with an Increased fl ~quency ofcardiac arrhythaias.Alaost all anaesthetic agents depress the Iyocardiuaand the resulting hypotension aay lead to rhytl l changes.Halothane anaesthesia is associated with high inc Idence ofnodal bradycardia, It is also associated with’ !otrlcularpreaature beats especially during spontaneous rc splratlon.Halothane sensitizes the ayocardlua to the arrl rthaogenlceffect of adrenaline. Arrhythaias can be preventl i lf thedose of adrenaline does not exceed 10 al. of 1 100000 to1 : 200000 concentration In 10 ainutes or 30 al. c F the saaeconcentration In l hour. Ventricular arrhythal. 5 are lessduring enflurane during halothane anaesthesi. whetheradrenaline Is Infiltrated or not.Isoflurane increases the threshold of adri! laline inducedarrhythala three tlaes than that In patler;s anaesthetizedwith halothane.Suxaaethoniua especially on repeated ada 1istrationcauses bradycardia an~ cardiac arrhythalas. The ~apld increasein serua potasslua associated with tl! use ofsuxaaethoniua in patients with burns. trauaa. UI ileala andneuroauscular disorder is associated with care iovascularhazards.Cardiac dysrhythaias aay occur during soac surgicalprocedures such as ocular surgery. oral and dent. L surgery.intracranial neurosurgical aanipulation especial: ~ in theposterior fossa.

traction on intra-abdoainal ilnd pelvicviscera. handling and stiaulation of the pericard Ja. heartand aorta. Instruaentation and aanlpulatlon of Larynx andtrachea aay result in cardiac arrhythaias which al t of aajorinterest to the anaesthetist.The electrocardiograa is now used as a rout’ le aonitorduring anaesthesia and operation. The ECG should ~ used toidentify ayocardial ischaeaia. recognize dysrh] ~haias andenables the physician to evaluate the functie 1 of thepaceaaker during the surgical procedure. The pel loperativeuses of ECG deteralne rate and rhytha disturb. Ices. Ischaeaicheart disease. ayocardial hypertrophy. hElrt block.electrolyte and drug effects and pericardlal disease.paceaaker function and infarction that aay occur l I the postoperativeperiod.[137)The prophylactic prevention of cardiac dysrhy haias inthe operating rooa and intensive care unit 1 es in theproper anassthetic aanageaent. Thorough pre operativeevaluation and correction of the cardiovascular status tooptiaua plays an iaportant role in the prevention f intraoperativedysrhythaias.The first stage in the treataent of cardiac dysrhythaiasis the eliaination of the predisposing facto s beforeproceeding to further therapy. There are aany fac ors whichaay be encountered during surgery and predispos. to thedevelopaent of arrhythaias such as nozious s iaulationduring light planes of anaesthesia which evoke a s rong syapatheticresponse leading to dysrhythaias and it s treatedby deeping the level of anaesthesia or teaporary s oppage ofstiaulation. Also, inadequate ventillation to point ofhypozia and acidosis aay result in arrhythaias. ypocapniawhich result froa hyperventillatioD will cause r,spiratoryalkalosis and coapensatory serua electrolytic shi ts whichaay predispose the patient to arrhythaias, aDd l orrectingthe respiratory defect is the solution. Adainistl stiOD ofdrugs that alter autoaaticity as epinephrine, a’ropine orpotasslua concurrently with agents that sensi’ize theayocardiua as halothane or cyclopropane aay produl ! cardiacarrhythaias. Such coabinatioD aust be avoided.[138]Cardiac dysrhyth.ias require treat.ent when hey:I - Interfere significantly with nor.al tissue p rfuslonJ2 - Adversely affect the nor.al balance between .yocardialoxygen supply and de.and; or3 - Predispose the patient to ventricular taclycardia orfibrillation.Drug therapy, cardioversion and electrical I acing areindicated when correcting the underlying caUS4 or causesfails to control dysrhyth.ias.