Severe bradycardia after applying subgaleal negative pressure drain- one must know the fact

Editor, - It is a common practice following intracranial surgery to place a negative pressure subgaleal drain so as to evacuate blood and prevent haematoma formation. Sometimes it can lead to untoward cardiovascular disturbances like severe bradycardia, hypotension and even asystole which can be best managed by being vigilant and prompt.

A 50 year old male was scheduled for a craniotomy for acute subdural haemorrhage. Intraoperative course was uneventful. After replacement of bone flap, a subgaleal drain was inserted, scalp closure was done and dressing was applied to the surgical wound. The bellow unit with sub atmospheric pressure was connected to the subgaleal drain. There was a sudden decrease in heart rate from 70 to 30/min. ECG showed bradycardia with no ST-T wave changes. Suction was removed and injection atropine 0.6 mg was given intravenously. Heart rate returned to normal. Thereafter the drain was left to drain under gravity without any negative pressure and patient remained stable haemodynamically.

Drainage system is required in certain neurosurgical procedures and these systems may vary from epidural to subgaleal drains[1]. One distinct advantage of a drain is to evacuate blood and prevent haematoma formation. But sometimes this can cause disastrous consequences. Karamchandani et al reported a case in which a patient developed severe cardiovascular disturbances after the vacuum drainage was connected to a subgaleal drain after craniotomy for aneurysm clipping[2].Further, development of sudden intracranial hypotension produced by negative pressure applied to a subgaleal drain has been reported in a case of aneurysm rupture[1]. Even asystole following craniotomy closure due to negative pressure suctioning of subgaleal drain has been reported[3]. Placement of an extradural drain connected to negative pressure produces a sudden decrease in intracranial pressure which is caused by transmission of negative pressure from the area where the drain was located to the subdural space. Severe decrease in intracranial pressure may cause a rostral shift of the brain structures leading to bradycardia which is reversed when intracranial pressure returns to its previous value[4]. In addition, traction on the scalp nerve endings on hanging the drain under gravity may trigger the trigemino-cardiac reflex which can also result in bradycardia.

To conclude suction should be applied gradually to drains after craniotomy and the anaesthetist should be particularly vigilant. If sudden unexplained bradycardia occurs during craniotomy closure, it should be managed promptly with anticholinergic agents and release of the negative pressure.

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