DRUG SYNERGISM IN OBSTETRICS

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SUMMARY

A case was reported of pulmonary oedema due to the synergisic action of myometrial stimulant drug—methyl ergotamine maleate (Methergin) and vasopressor drug—Methoxamine hydrochloride (Vasoxine).

Introduction

Drug interaction occurs whenever a diagnostic or therapeutic or any other action of a drug in or on the body is modified by another exogenous chemical (interactant). It may potentiate, diminish, eliminate or otherwise modify expected actions and affects, or produce a new effect. Such effect may be beneficial and expected or detrimental and unexpected.

Here a case is presented who developed acute pulmonary oedema due to potentiating effect of synergism between methylergotamine maleate and methoxamine hydrochloride which lead to severe systemic hypertension and pulmonary oedema.

Case Report:

A 26 years old primigravida was to be operated upon the lower segmental caesarean section. Her pre-anaesthetic checkup revealed no abnormality clinical or on X-ray chest and on E.C.G. examination.

She was given extradural lumbar block for operation. At the time of delivery of head, patient wae given 0.4 mg of methylergotamine (methergin) intravenously and 20 units of oxytocin (syntocinon) in drip infusion bottle. Patient had severe postpartum haemorrhage which lead to severe hypotension with a blood pressure of 70 mm of Hg. Immediately patient was given incremental doses of methylergotamine for retraction of uterus. Fresh blood and fluid was transfused to restore the blood pressure but this failed to bring the blood pressure to safe level, so vesoxine in dose of 10 mg was injected intravenously as a vasopressor drug. Within 2-3 minutes her blood pressure mounted to 180/106 mm of Hg.

After 5 minutes of injection of vasoxine, patient become cyanosed, respiration was shallow and rapid with a respiratory rate of 35/minute and coarse crepitations were audible all over the chest. Respiration was spontaneous but patient was unable to cope with excess of frothy secretion. She was diagnosed as a case of pulmonary oedema and was treated accordingly by endotracheal intubation and intermittent positive pressure ventilation by 100% oxygen, antitrendelenburg position, injection morphine 10 mg intravenously, injection aminophyline 240 mg. injection lasix (Frusemide) 50 mg, and rapid digitalisation with digoxine 1.2 mg intravenously.

After 6 hours of this treatment the respiratory

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rate reduced to 20 per minute and there were fine crepitations at the bases of lungs. After 16 hours patient was extubated, was responding to command and no creptations were audible over the chest.

Discussion

Extradural analgesia was given in this case as it has been found that infants born after extradural analgesia are less acidotic and better oxygenated than those born after general anaesthesia for lower segmental caesarean section (Fox and Houls, 1971).

Pulmonary capillary system is a low pressure system and is exceeded by colloid osmotic pressure of plasma which tends to retain fluid within circulation. If for any reason, the pulmonary capillary pressure rises above the osmotic pressure, fluid passes across the alveolar capilliary membrane and so the physiological balance is disturbed resulting in pulmonary oedema.

The possible causes of pulmonary oedema during extradural block are (i) pre-existing cardiopulmonary disease, (ii) over transfusion, (iii) amniotic fluid embolilsm, (iv) immune reaction to blood transfusion, (v) shock syndrome and (vi) synergesic action of drugs. All the causes of pulmonary oedema durnig extradural block except drugs synergism were excluded one by one by the negative findings.

The cause left was drug synergism between vasopressor—vasoxine and uterine stimulant—methergin. Numerous cases of parturients who developed severe, persistent hypertension following the combined use of oxytocic and vasopressor have been reported (Casady and Moore 1960). There is evidence that methylergotamine can stimulate α—adrenergic receptors in ordinary vessels and ß—adrenergic receptors in the vessels of muscles and if given to a patient under the influence of another α—stimulater (Wassef, 1974), e.g, a pressure drug; can produce wide spread vasoconstriction with hypertension leading to acute pulmonary oedema (Atkinson and Rushman, 1977). while synthetic oxytocin on the other hand results in transient dilatation of vessels containing both α and ß—receptors, so results in hypotension. Hence, it is concluded that in patients on vasopressor drug, oxytocin is preferable as myometrial stimulant than methylergotamine (Johnstone, 1972), because of the synergesic effect of methylergotamine maleate (Methergin) and vasopressor drug—Methoxamine hydrochloride (Vasoxine) which leads to complications like persistant systemic hypertension and pulmonary oedema which is thought to be the cause of pulmonary oedema in present case.

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