

Anesthesia Keywords 2006

Corrections
Updated 05/29/2006

Page 221 The first sentence should read ".....deamination of catecholamines into their INACTIVE form....."

PR002 MAO INHIBITORS: DRUG INTERACTIONS

By blocking the oxidative deamination of catecholamines into their **inactive** form (vanillylmandelic acid), monoamine oxidase inhibitors cause an accumulation of norepinephrine, epinephrine, dopamine, and serotonin, particularly in the brain, to alleviate depression. Sympathetic hyperactivity is seen above the therapeutic index, manifesting as hypertension, tachycardia, agitation, hyperpyrexia, hallucinations, and seizures. Drugs that act by releasing accumulated stores of catecholamines will result in an exaggerated response, precipitating a hypertensive crisis. Ephedrine and tyramine are examples. Even foods with a high tyramine content, like cheese and red wine, can have this effect. Meperidine will also induce hypertension, seizures, and coma in the presence of MAO inhibitors.

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Page 225 (4th paragraph) "with heart failure and liver failure yielding low urine sodium (<20meQ/L) and renal failure in the absence of diuretics giving rise to HIGH urine sodiums (>20meQ/L)

PR009 Causes: Hyponatremia

Hypervolemic hyponatremia occurs when both free water and sodium are replaced in excess, with the amount of the former exceeding the latter. Again, urine sodium concentrations can help to differentiate the cause, with heart failure and liver failure yielding low urine sodiums (<20 mEq/L) and renal failure in the absence of diuretics giving rise to **high** urine sodiums (<20 mEq/L).

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Page 237 0.02% of desflurane is metabolized, NOT 0.2%

PR032 INHALED ANESTHESIA: METABOLISM

Volatile anesthetics are both oxidatively and reductively metabolized to varying degrees. Of the amount of volatile agent absorbed during anesthesia, only **0.02%** of desflurane is metabolized, whereas the percentage increases to 0.2-2% of isoflurane and 2-5% of sevoflurane. By contrast, 20-46% of halothane taken up during anesthesia is metabolized, and it is the oxidative metabolites that are thought to play a role in immune-mediated halothane hepatitis. Desflurane, isoflurane, and halothane are oxidized to reactive trifluoroacetyl intermediate metabolites, whereas sevoflurane is metabolized to fluoride ions.

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Page 243 ".....or decrease IS the driving gas in an air-oxygen mixture" change IS to "if"

PH002 EFFECTS OF VENTILATOR BELLOWS HOLE

A few things can happen in this situation; it will depend on the type of bellows and ventilator.

1. A hole in the bellows can cause alveolar hyperinflation and potential barotrauma if high pressure driving gas (always outside the bellows) enters the patient's circuit (always inside the bellows).

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2. The oxygen analyzer may change unexpectedly; it may increase if the driving gas is 100% oxygen, or decrease **if** the driving gas is an air-oxygen mixture. 100% oxygen as the driving gas is a good built-in safety mechanism of certain anesthesia machines.
3. An anesthetic can seem otherwise normal, but a bellows that becomes progressively less full can be the result of a hole in the bellows.

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Page 277 *0.003 is the solubility coefficient, not 0.03*

PS017 **O₂ DELIVERY PHYSIOLOGY**

The oxygen content of blood can be calculated with the following equation:

$$\text{O}_2 \text{ content} = ([\text{Hgb}] * 1.34 * \text{O}_2\text{Sat}) + (\text{PaO}_2 * 0.03)$$

where [Hgb] is hemoglobin concentration in g/dL, 1.34 is correction factor, PaO₂ is the partial pressure of oxygen in arterial blood, and **0.003** is the solubility coefficient for oxygen in blood.

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Page 288 *Very last sentence "to the point of impeding cerebral blood flow". "Cerebral" should be "Coronary."*

PS036 **DETERMINANTS: CORONARY BLOOD FLOW**

As blood flows from an area of high pressure to one of lower pressure, the driving pressure for coronary perfusion can be defined as the difference between the pressure within the aorta and the pressure within the left ventricle. Since the pressure within the ventricle and the aorta are approximately equal during systole when the aortic valve is opened, the majority of coronary blood flow occurs during diastole. Thus, coronary perfusion pressure is equal to aortic diastolic pressure minus left ventricular end diastolic pressure (LVEDP). Of the factors that influence this relationship (diastolic time, intraluminal pressure, and coronary vascular tone), the time spent in diastole has the most influence on coronary blood flow. Increased heart rates decrease the amount of time spent in diastole, thus critically reducing coronary blood flow. Severely decreased heart rates can, however, promote overfilling of the ventricle such that intraluminal pressure is increased to the point of impeding **coronary** blood flow.