EDITORIAL

Can We Quell the Anxieties about Adrenaline and Penicillin?

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Two drugs which have proved to be indispensable for life have attracted my attention. One is adrenaline which is a life saving drug and the other is penicillin which is of paramount significance in quite a number of life threatening infections.

Adrenaline is presently available in an ampoule of 1/1000 concentration and is commonly employed as a haemostatic agent, as a nasal decongestant and as an adjunct to local anaesthetics in varying concentrations[1]. For resuscitation of cardiac arrest and to abort an acute attack of bronchial asthma, adrenaline is employed as 1/10,000 and 1/1000 strengths respectively[1,3]. But for epidural and spinal anaesthesia, brachial plexus block and other nerve blocks the adrenaline concentration should be kept as low as 1:200,000[1,2]. Inconsistencies exist in making this low concentration out of the available ampoules of 1/1000 concentration. One way of getting 1/200,000 strength is to dissolve 1 ml adrenaline ampoule of 1/1000 concentration in 199 ml sterile water for injections and each ml of the resultant 200 ml solution would have the required concentration of 1/200,000. This is indeed a tedious and cumbersome way. The second method is to gradually taper the concentration till the required concentration of 1/200,0000 is obtained. First we add 9 ml of sterile water to 1 ml adrenaline ampoule having a concentration of 1/1000. The 10 ml solution formed this way provides us with a concentration of 1/10,000. Now we take 1 ml of this solution and add 9 ml of sterile water and the total 10 ml solution thus formed provides us with a concentration of 1/100,000. We again take 1 ml of this solution and add 1 ml of sterile water and the concentration thus becomes 1/200,000 ie, each ml provides us with the 1/200,000 concentration which we require. But these two methods are seldom or rather infrequently employed because they are time consuming. The third method is to draw the 1/1000 adrenaline ampoule in a 20 ml syringe and then push the piston of the syringe so as to blow out the adrenaline. The part remaining in the syringe is roughly equal to 1/10 ml or 1/200,000 in concentration. Then in the same syringe the required amount of local anaesthetic is withdrawn. Although mixtures of xylocaine with adrenaline 1 in 200,000 are commercially available in the developed countries, they are seldom found on the shelves of the pharmacy stores in many under previlaged countries and thus native formulae need to be used to get the desired strengths.

In many countries the penicillin test dose ampoules known as pre-pen are not available; therefore it is suggested that it would be prudent and rational to use the following procedure for testing penicillin.

Take 1 vial of crystalline penicillin containing 1,000,000 units and dissolve this powder in 10 ml of sterile water. Now take 1 ml of this mixture which provides us with a concentration of 100,000 units and add 9 ml of sterile water. Take 1 ml of this mixture which gives us a concentration of 10,000 units and add 9 ml of sterile water again. Take 1 ml of this mixture which provides us with a concentration of 1000 units and add 9 ml of sterile water again. Each ml of this mixture thus provides us with a concentration of 100 units. Take 0.4 ml of this mixture of penicillin and inject it intradermally as a test dose.

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I earnestly hope that the drug manufacturing companies would agree with me that delicate precision is needed to arrive at the correct dosage. It is not easy to gauge the smaller strengths with dexterity and exquisite precision, and any inadvertent variation in dosage would bring about disasters. It has been noted on innumerable occasions that physicians looking after out patients seem reluctant to prescribe penicillin because of their fears with its use. There is mounting evidence to support that testing the wrong dosage has resulted in many unpleasant consequences. Penicillin skin testing is not a fashion in Europe because not only does it prove to be unreliable but at the same time manufacturers of pre-pen state in their literature that skin testing with penicillin does not guarantee absolute safety as it does not ward off against any untoward reactions. We, from the developing countries, routinely do the penicillin skin testing in the fond hope to stave off the reactions. How far our testing can guarantee safety could be anybody's guess? The drug manufacturing companies can offer help so as to dissipate the stresses accompanying the use of penicillin. No one has poignantly illustrated the desperate plight of the patients who happen to use adrenaline or penicillin under the prevailing uncertainty. It is starkly and painfully clear that we require adrenaline ampoules in lower strengths and at the same time we require the test dose ampoules of penicillin. Both drugs are fortunately synthetic and as such it will not entail much of labour for the companies to manufacture these drugs in lower strengths and preferably introduce other innovations that can satisfy our needs. Observance of strict and correct dosage is the hallmark of safe practice. The manufacturing companies should delve a little deeper into this vexed problem that would quell and appease the growing anxiety of physicians in prescribing or using these drugs.

REFERENCES

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