Equipment Review

Pocket mask ventilation: a critical reappraisal

Provision of adequate ventilation requires an open secure airway and a means to deliver adequate volumes of air. Oxygen enrichment, although desirable, does not appear to be as critical as adequate volume delivery. The American Heart Association (1974) recommends a minimum of 800 cc tidal volume for optimal treatment of cardiopulmonary arrest.

The pocket mask (Laerdal Medical Corporation) is a compact inexpensive clear polyvinyl device moulded to fit over the nose and mouth and fitted with a portal for oxygen supplementation (Fig. 1). It is collapsible to fit easily into a coat pocket and, therefore, it is portable and accessible. Unlike the bag-valve-mask unit, both hands of the rescuer remain free to achieve a secure fit and eliminate air leak. The use of the rescuer's own lungs for ventilation encourages adequate inspiratory volumes.

In 1980 use of the bag-valve-mask for ventilation was impugned in a comparative study from the Medical College of Virginia (Harrison *et al.*, 1982). Ventilatory volumes delivered to a recording resuscitation manikin were compared using the bag-valve-mask (BVM), endotracheal tube (ETT), esophageal obturator airway (EOA) and a pocket mask (PM). When the rescuer's own lungs were used with the EOA and PM, volumes delivered to the 'lungs' were comparable to ETT ventilation. Volumes delivered by BVM averaged 500 cc.

Elling & Politis (1983) compared the use of the bag-valve-mask and pocket mask and found that more than 50% of the 320 emergency medical technicians studied were not capable of adequate ventilation using the bag-valve-mask. He recommended that future educational courses teach the bag-valve-mask skill as a four hand-two person exercise. Pocket mask ventilation was determined to be far superior, achieving ventilatory volumes approaching one litre and surpassing all BVM devices tested. In a presentation before the Society of Critical Care Medicine in June 1982, Jesudian *et al.* confirmed Elling's findings and demonstrated that the mean delivered volume by the BVM single rescuer technique was 592 ± 78 ml whereas it was 1132 ± 53 ml when two rescuers were participating.

It is clear from these recent reports that the pocket mask is a superior form of ventilation and reliably delivers a litre or more of ventilatory volume with a single rescuer using the rescuer's own lungs. Clinical data correlating method and volume of ventilation with the level of patient oxygenation, however, is currently unavailable. This data is essential to confirm what advantage, if any, the pocket mask may have over other forms of mechanical ventilation.

SUMMARY

The pocket mask is a convenient and cost effective method of ventilation when used

Fig. 1 Pocket mask ventilation demonstrating maintenance of open airway and method of ventilation with oxygen enrichment.

with the rescuer's lungs and appears to offer a clear advantage in terms of volume delivered during the early treatment of respiratory arrest. Clinical data is needed to confirm the advantage of this device.

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