



## Original Article

# Vasopressor is the Drug of Choice in the Management of Cardiac Arrest Occurring in Early Spinal Anesthesia

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### Abstract

In Rajshahi Medical College Hospital this experience was based on 8 patients who got high spinal block for intended surgery for Caesarian section. These patients were totally apnoeic, cyanosed and there was no recordable pulse or blood pressure. Cardiac massage and artificial ventilation with rapidly introduced E.T.T. were instituted and inotrope Ephedrine was given without recovery. But when adrenaline was given in diluted form, soon pulse, B.P. respiration and consciousness were regained.

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### Introduction

In anesthesiology for higher abdominal surgery especially with high abdominal pressure e.g. c/s, big ovarian tumour, obese patients for cholecystectomy etc. cardiopulmonary arrest are not uncommon.

The anesthesiologist becomes anxious in this potentially catastrophic situation, because if the diagnosis and management are delayed or insufficient patient may have a fatal outcome.

In this emergency situation, drugs having mainly the inotropic and chronotropic property are less useful than the drugs having vasopressor property.

### Material and Methods

Eight patients of ASA grade I & II were included here for c/s.

Drugs : Ephedrine  
Adrenaline  
Dopamine  
Dobutamine were kept ready  
All resuscitating equipment were checked and

kept ready for service.

Facilities for G.A. were ensured.

E.C.G. monitor was attached with patients.

Defibrillator was kept ready for service.

### Results

Age, weight, height, doses of ephedrine and adrenaline are shown in table-I-III. It is found that the more the weight, the more vasopressor adrenaline was required. Again cardiac arrests were earlier in patient with greater body weight.

Table-I

Age in years	Weight in kg	Height in fit & inch
25	75	5'-1"
24	65	5'-1"
30	76	5'-0"
28	80	5'-0"
19	60	5'-2"
19	65	5'-0"
22	70	5'-1"
30	60	5'-4"

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**Table-II**

Dose of Ephedrine in mg	Dose of Adrenaline in microgram
30 mg	330 mc
22 mg	250 mc
45 mg	500 mc
50 mg	750 mc
15 mg	200 mc
30 mg	300 mc
30 mg	300 mc
15 mg	150 mc

**Table-III**

Dose of Adrenaline in microgram	Time of cardiac arrest after spinal block
330 mc	7 minutes
250 mc	10 minutes
500 mc	6 minutes
750 mc	5 minutes
200 mc	9 minutes
300 mc	8 minutes
300 mc	8 minutes
150 mc	11 minutes

**Discussion**

In high spinal block there is profound hypotension, Brady cardiac, ultimately no pulse, B.P. respiration and consciousness due to cardiac arrest.

This cardiac arrest is due to remarkable fall of peripheral resistance, which leads to greater degree vasodilatation. This vasodilatation is associated with the enormous compliance of circulatory part of cardiovascular system and ultimately there is grave fall of venous return to heart.

Another contributory factor in favour of fall peripheral resistance is concomitant unbalanced parasympathetic over activity.

All these above mentioned factors are associated with severe hypotension, which may not be sufficient to maintain perfusion of vital organs like central nervous system.

So motor out flow to maintain respiration by phrenic nerve and cardiac activity by sympathetic outflow to heart are lost which leads to cardiac arrest.

Question comes why the patient with short height and high abdominal pressure have a tendency to get high block with cardiac arrest.

We know the increased intra abdominal pressure is also associated with increased intra thoracic pressure so venous return from epidural venous plexus via segmental veins into big veins of abdomen and thorax like inferior vena cava, azygos veins is reduced. This engorged epidural plexus of veins create pressure on the flexible underlying dura matter; so the pressure of C.S.F. is increased and a part of total spinal S.S.F. is shifted into cranium.

Now if local analgesic is given with fixed dose or as per body weight there is increased concentration of local analgesic in C.S.F. So there is rapid diffusion of local analgesic upward through C.S.F. More diffusion leads to more sympathetic block, so there is drastic reduction of blood pressure.

In this block-the main involvement of cardiovascular system is the circulatory part as it has sympathetic supply from lower part of spinal cord which is initially blocked but the heart is spared which has supply from higher part of spinal cord that is T<sub>1</sub>-T<sub>4</sub>, which is not blocked still.

So the heart still contracts like an empty vessel with no/poor venous return.

Here for pharmacological action if a drug having inotropic property without significant vasopressor property that is ephedrine is given- no significant out come is expected.

On the other hand drugs having significant vasopressor property like adrenaline, dopamine, phenylephrine are given good out come results.

Important pharmacological property of Conventional vasopressor and inotropes used in the management of cardiac arrest.

	Dubotanine	Ephedrine	Dopamine	Adrenaline
Inotropic property	++	+	+	++
Chronotropic property	+	++	++	++
Peripheral resistance	±	±	++	+++

### Conclusion

From the above table it is clear that among all conventional drugs used for the management of cardiac arrest-the adrenaline has possessed highest vasoconstricting effect so if cardiac arrest occurs early in spinal anesthesia-then this drug should be first choice.

### Conclusion

As the no. of cases included in this experience based study is few in order to enrich the experience further more and more cases should be included here. As the situation regarding the management of patient of cardiac arrest is very time limited and alarming the concurred anesthetist should have proper skill in this respect and that skill should be applied in due time in due way otherwise grave consequences will run.

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