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Title : EPIDURAL ANESTHESIA SUPPRESSES VASOPRESSIN HYPERSECRETION INDUCED BY SURGERY .

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INTRODUCTION

Vasopressin hypersecretion has been demonstrated during surgery . This hypersecretion is mostly related to surgical procedures and not to anesthetic drugs (1 , 2) . In order to determine if blockade of nociceptive nervous pathways arising from the surgical area , could suppress this hypersecretion we compare the response to the same operation performed under either general or epidural anesthesia .

METHODS

We explored plasma and urine Arginine Vasopressin (AVP) levels in two groups of patients submitted to the same operation of total hip replacement . Patients had normal salt intake before this operation and none of them had history of cardiac , renal or hepatic failure . In the first group of 7 patients , general anesthesia was performed using thiopental (4mg/kg) and succinylcholine (1mg/kg) for induction , fentanyl (4mcg/kg) before incision , and nitrous oxide 70% and fentanyl (100mcg/30 min.) during the operation . Isotonic saline solution was infused at a rate of 5 ml/min. Blood losses were also carefully replaced . In the second group , 5 patients underwent epidural anesthesia using bupivacaine 0.5% . The metameric level of anesthesia extended from S.5 to T.4 . As in group I , rate of infusion was 5 ml/min .

Plasma and urine AVP measurements were carried out by a sensitive radioimmunoassay . Blood sample was collected at arrival in surgical room and then two series of samples were pooled 5 , 10 and 15 minutes after induction of anesthesia and repeated 5 , 10 and 15 minutes after skin incision . The last sample was collected at the fourth post operative hour . Sampling were also performed on total urine for a control period , the periods of anesthesia and surgery and the post-operative period during four hours

RESULTS

(table I)

In group I , anesthesia was followed by a no significant increase in plasma AVP levels . Plasma AVP concentrations significantly increased following skin incision . On the fourth post-operative hour was observed a further rise in concentrations . Similar variations were found in urine AVP .

In group II , epidural anesthesia did not modify plasma AVP levels . After skin incision , plasma AVP was also not significantly modified . On the fourth post-opera-

tive hour , three hours after the disappearance of epidural anesthesia , plasma AVP rose to the levels identical to the post-operative values of group I . A slight increase of urine AVP concentrations occurred during operation , it was much lower than in group I ($p < 0.001$)

DISCUSSION

These results suggest that the surgically induced AVP hypersecretion , observed under general anesthesia is prevented when the same operation is performed under epidural anesthesia . Further more , by the time epidural anesthesia disappeared , a drastic increase was noticed in plasma AVP . Ukaï et al. have shown , on laboratory animals , that ventrolateral cordotomy which selectively suppresses nociceptive pathways arrested stress induced AVP secretion (3) . Thus , the observed suppression of AVP secretion by epidural anesthesia could be related to the interruption of conduction along the nociceptive pathways . This effect of epidural anesthesia on AVP secretion can be added to the preventing role of this anesthetic procedure on hormonal response to stress stimulation (4) .

Table I :
PLASMA AVP CONCENTRATIONS (pg/ml)
(mean+SEM)

	CONTROL	ANESTH.	SURG.	POST OP.
GROUP I	I.29 +0.43	4.10 +2.84	8.82 +3.03	24.54 +5.93
GROUP II	I.21 +0.28	0.95 +0.29	3.10 +2.72	19.56 +8.36

* $p < 0.05$, ** $p < 0.01$

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