

Title ANESTHESIA FOR PERIPHERAL ARTERIOGRAPHY

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Introduction. Arteriography of the extremities is associated with apprehension and considerable pain from the injection of contrast material. Detailed definition of small peripheral arterial architecture is frequently of poor quality or not obtainable because of severe vasospasm or discomfort from a totally uncooperative patient. This often results in either a repeat or omission of this important diagnostic procedure. In order to eliminate this problem, general or regional anesthesia were utilized and compared with the results obtained by premedication with analgesics alone.

Methods. The study was performed on 739 patients during a 7 year period. The analgesia group (ANALG) of 303 patients consisted of 234 studies for peripheral vascular disease and 69 for traumatic injuries. The anesthesia group (ANESTH) of 436 patients was composed of 225 studies for peripheral vascular disease, 15 neurovascular disorders, 13 for neoplasms and 10 for congenital deformities. Patients in the ANALG group received standard premedication of 0.1 mg/kg of morphine sulfate, subcutaneously and 1-1.5 mg/kg of hydroxyzine, intramuscularly 1-1.5 hr before the procedure. Patients in the ANESTH group were premedicated with 10 mg of diazepam, orally and 0.4 mg of atropine sulfate, intramuscularly 1-1.5 hr prior to the studies. Informed consent was obtained during the preoperative visit for all patients in both groups. All risks, possible complications and costs were explained to patients in the ANESTH group. ANESTH patients received either general (balanced anesthesia or halogenated agents) or regional anesthesia (spinal or epidural) for procedures in the lower extremities. Cost-benefit analysis and the incidence of specific complications between the groups were compared by Chi square analysis. Time for angiographic procedure in the 2 groups was compared by means of unpaired Student's t-test.

Results. The incidence of angiographic complications in the 2 groups is indicated in the accompanying table. The frequency of complications in the ANESTH group (12/436) was significantly less ($P < .001$) than in the ANALG group (34/303). Use of anesthesia resulted in a significantly shorter duration of angiographic procedure (68 min for ANESTH and 84 min for ANALG). However, the intraprocedure time-saving was offset by an average additional 30 min for set-up and proper administration of anesthesia. The additional cost of anesthesia is to be added as a consideration.

Discussion. Elimination of pain is the primary objective of anesthesia. The additional 14 min and cost of anesthesia is offset by the benefit-to-patient criteria which include better patient monitoring, less procedural repetition, virtual elimination of anxiety or apprehension, lower incidence of vasospasm after radiographic contrast material injection, superior quality films of anatomical structures, additional savings of radiographic materials and fewer complications from the diagnostic procedures. These criteria easily justify the utilization of anesthesia for angiography of the extremities.

DISTRIBUTION OF PATIENTS BY ASA RISK CLASSIFICATION

ASA RISK CATEGORY	ANESTHESIA (436 patients)	ANALGESIA (303 patients)
I	34 (7.8%)	44 (14.5%)
II	269 (61.7%)	206 (68.0%)
III	91 (20.9%)	28 (9.2%)
IV	42 (9.6%)	19 (6.3%)
V	—	6 (2.0%)

SUMMARY OF COMPLICATIONS

	Anesthesia	Analgesia
Anginal pain	0	8*
Acute myocardial infarction	0	2
Respiratory depression	0	3
Hypotension requiring treatment	2	6
Nausea and vomiting	7	15*
Headache	3	0
Total complications	12	34*

* $P < .01$