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Title : REGIONAL INTRAVENOUS GUANETHIDINE FOR SYMPATHETIC BLOCK

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Introduction. One of the few pain conditions which respond to nerve blocks when treated early is reflex sympathetic dystrophy. Until recently, this was performed by repeated sympathetic blocks and/or sympathectomy. In the last few years, regional intravenous guanethidine was introduced in Europe for sympathetic blockade (1). In this country, guanethidine is available as an oral medication only. The purpose of this study was to confirm the effectiveness of regional intravenous guanethidine for the treatment of reflex sympathetic dystrophy.

Method. An Investigational New Drug number from the Food and Drug Administration and institutional approval were obtained. After receiving informed consents from 6 patients suffering from reflex sympathetic dystrophy, they were admitted to the hospital. Chest x-rays, ECGs, CBCs and SMA-6's were performed. An intravenous line was started in a non-affected extremity. Blood pressure was monitored frequently and ECG was monitored continuously throughout each study. Temperature measurements were taken on the affected and contralateral extremity before, 30 minutes, 24 hours, 1 week and 2 weeks after the block was performed. Pain measurements were evaluated from a visual analogue scale before, 30 minutes, 24 hours, 1 week and 2 weeks after the block. Using a standard Bier technique, (2) 20 or 40 mg of guanethidine in 20 or 40 ml of 0.5% lidocaine (depending upon whether an upper or lower extremity was treated) was injected. Fifteen minutes later, the tourniquet was slowly deflated.

Results.

No	Duration of pain in months	Results	Duration of Pain Relief in days
1	36	Excellent	10
2	36	Excellent	10
3	3	Excellent	90
4	8	Excellent	90
5	12	Good	60#
6	10	Good	*

#Patient has shoulder pain due to recurrent dislocation of the shoulder.
*Patient continued to have pain in the foot, however, block was helpful to determine the lowest level of amputation.
Note: Patients from 1 to 5 had reflex sympathetic dystrophy following traumatic or surgical nerve injury in the upper extremity. Patient # 6 suffered from Buerger's disease. In none of these patients were any circulatory changes noted during or after the procedure.

Discussion. Guanethidine is a drug which has very specific actions on the peripheral sympathetic nervous system. One method by which it produces sympathetic blockade is to inhibit response to sympathetic adrenergic nerve activity by blocking the release of catecholamine normally produced by nerve stimulation (3). The more important action, however, is to act as a substrate for the pump that produces active transportation of epinephrine into nerve endings (4). Once within the adrenergic neuron, guanethidine is taken up by nor-adrenaline storage vesicles and releases nor-epinephrine from the nerve ending. Such release of norepinephrine may produce transient hypertension if large amounts of guanethidine are given intravenously, followed by prolonged hypotension (5). Guanethidine is capable of depletion of peripheral tissues of their catecholamine contents, with the exception of the adrenal medulla. Guanethidine is mainly metabolized in the liver. Excretion is slow with a half life of 5 days via the kidney mainly in the form of the parent compound and two more polar and much less active metabolites. Sympathetic blockade of isolated limbs by intravenous guanethidine has been reported since 1974 (1,6). These reports endorse this technique enthusiastically for long lasting (one to two weeks) sympathetic block and stress the lack of complications. We concur with other investigators that sympathetic blockade with guanethidine is safer, simpler and longer lasting than sympathetic blocks and should be introduced in in this country as a routine ambulatory procedure to be performed by anesthesiologists familiar with the Bier regional technique.

References.

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