

Local Intrauterine Anesthesia

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Submitted: 09 July 2019; Accepted: 22 Oct 2019; Published: 01 Nov 2019

Background

The first local anesthetic to be discovered was cocaine an alkaloid in large amount (0.6 to 1.8%) on the leaves of Erythroxylon coca a shrub growing in the Andes Mountains. Vast quantities were consumed orally and annually. The plant ash when chewed releases the plant alkaloid and absorbed across the mouth mucous membrane. In 1880 Niemann noted that the tongue was numb with no sensation upon chewing this substance. It is well known that Lidocaine was absorbed across the mucous membrane.

Anesthesia for gynecological surgery procedure is not very satisfactory in certain aspects. General anesthesia is excellent but it involves the services of an anesthesiologist in the hospital. Para cervical block uses from 10 to 18 cc of 1% Lidocaine a relatively large amount. Reports indicated that about 18 cc of 1% Lidocaine used to inject at a depth of 2 cm at the 4 and 8 o'clock positions.

The VAS score from the block itself is between 19 to 69 mm. A quoted study showed that Para cervical block does not significantly decrease pain with IUD insertion.

Gynecology Surgery Involves the Following Steps

1. Injection into the vaginal cuff of 1% Lidocaine prior to incision to decrease post op pain
2. Injection of 1: 200,000 Neosynephrine to decrease bleeding
3. Apply 1% Lidocaine to the endocervix to insert Dilateria
4. Uterine anesthesia is just an extension of these steps

Study Design

This is a retroactive study comparing patients with gynecological procedure without any anesthesia and with intrauterine 1% Lidocaine injected into the uterine cavity. Pain was evaluated with the VAS score at

1. Instrument insertion
2. Actual Procedure
3. 5 minutes post operation.

The visual analog scale is a 10 cm horizontal line with the left hash mark denoting "no pain" and the right has mark denoting "worst pain imaginable". Patients write an X on the line to characterize their pain. Study clinicians measured the distance from the left

hash mark to the X and recorded the measurement in millimeters. In pain research, VAS that uses a line to represent the continuum of "no pain" to "worst pain imaginable" are thought to be superior to other techniques.

The procedures include

1. IUD insertion
2. SIS
3. Endometrial biopsy
4. D&C

Others such as IUI, sterilization etc., may also be included.

Fate of Lidocaine

Lidocaine as an ester and toxicity is lost as a result of hydrolysis primary by plasma esterase, which is cholinesterase. The liver also participates. Amides are degraded by liver cells.

Overdose of Lidocaine has few cardiovascular effects. CNS effects include sleepiness, dizzy, altered mental status, decreased hearing, muscle twitching and seizures or respiratory arrest.

Instillation of Xylocaine 2% into the bronchial tubes causes late 3.5 hours later seizures. The level was at 18.32 mg/L.

IV infusion Lidocaine at 1 mg/Kg/hr causes unresponsive episodes and tachycardia on post op day 2. The level was at 6.3 mg/L.

Dosage

For arrhythmia, Lidocaine dosage is about 0.7 to 1.4 mg/Kg which is about 50 mg IV or 5 cc. IV infusions of 1-4 mg/min causes a serum range of 1-5 mg/L. IM dose would be for 4-5 mg/Kg which is about 20cc or 200 mg causes the same level [1-10].

Results

After 3-5 cc of 1% Lidocaine injection into the uterine cavity, the median VAS score is only about 5mm. On testing serum Lidocaine at 5 minutes after injection the serum level is below 1.5 mg/L. Our normal Lidocaine therapeutic level is 1.5 to 5mg/L. Without anesthesia the VAS score is about 75 mm. Please see the chart attached.

Table: Demographics

Characteristics	With Anesthetic	No Anesthetic	Statistics
Age	24 to 48	32 to 46	NS
Race	Hispanic, white (70%)	White, black (60%)	NS
Marital Status	Single	Single	NS
Education	12 Years	12 Years	NS
Nulliparity	Yes (70%)	Yes (70%)	NS
Menstrual Cramps	Yes	Yes	NS
Laminaria Inserted	Yes (80%)	Yes	NS
VAS	5 median	75 median	P < 0.05
Lidocaine Serum Level	<1.5 mg/L	Zero	NS

Conclusion

According to Hacvelioglu et al., as well as others, the pain from hysterosalpingography (HSG) and they are radiologists, is perceived from

1. Metal cannula advanced through the endocervix
2. Caused by uterine cramps from uterine distention and release of prostaglandins
3. Due also from fluid passing through the Fallopian tubes

They found that adding Para cervical block has no effect for pain relief as well as IM Dexketoprofen and intrauterine Lidocaine.

First of all metal cannula is now obsolete and replaced by plastic cannulas. Intrauterine Lidocaine does not affect pain at the endocervix which can be relieved by applying 1% Lidocaine to the endocervix and absorbed through the mucous membrane and quite effective.

Intrauterine Lidocaine does not affect uterine contractions and distention but excellent for local pain relief such as endometrial biopsy without adding any fluid. Not only that, we start procedure about 5 minutes after instillation and not 45 minutes later.

Injecting 3-5 cc of 1% Lidocaine into the uterus results in very good anesthesia. Knowing the serum level is below 1.5 mg/L this procedure can be used with impunity.

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