**Anaesthesiology Protocol**

**Table 1: Anaesthesiology protocol for umbilical hernia repair**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Pre-anaesthetic | Dose (mg/kg) | Induction | Dose (mg/kg) | Additional Analgesia | Dose (mg/kg) | \*\*Maintenance  | Dose(mcg/kg/min) |
| Xylazine HCl (20 mg/ml) | 0.025 | Diazepam (5mg/ml) |  | \*Lidocaine HCl (20mg/ml) |  | Ketamine HCl (100 mg/ml) | 66 |
|  |  | Ketamine HCl (100mg/ml) |  | Flunixin meglumine (50 mg/ml) | 2.2  | Lidocaine HCl (20 mg/ml) | 20 |
|  |  | Lidocaine HCl (20mg/ml) | 1.0 |  |  | Xylazine HCl (20 mg/ml) | 0.66 |
|  |  |  |  |  |  |  |  |

\* Lidocaine HCl – Additional analgesia provided by use of splash blocks. A solution of 1 ml Lidocaine diluted to 10 ml with saline was used. It was used when a response to pain was present.

\*\* Maintenance – Alternatively, isoflurane can be used for maintenance.

**CALCULATIONS**

* **Pre- Anaesthesia**:

1) Xylazine HCl

Weight of kid = 4.5 kg

Concentration =20mg/ml

Dose= 0.025mg/kg

Volume = (Dose (mg/kg) × Weight (kg)) / Concentration (mg/ml)

Volume = (0.025 × 4.5)/20

 =0.005625ml

0.01ml diluted with saline to 0.5ml in syringe.

Give kid 0.25ml of the solution.

Volume administered = 0.005ml

* **Induction:**

1) Ketamine: Diazepam in 1:1 mixture of 0.5ml.

0.25ml Ketamine was mixed with 0.25ml Diazepam

2) Lidocaine HCl

Weight = 4.5 kg

Concentration = 20mg/ml

Dose = 1.0mg/kg

Volume = (1× 4.5)/ 20

 = 0.225

Toxic dose Lidocaine = 10mg/kg

Volume toxic to kid = (10 × 4.5)/ 20mg/ml

 = 2.25ml

‘Top up’ volume:

 ½ induction drug volume given

* 0.25ml Ketamine/ Diazepam solution
* 0.1125ml Lidocaine

These can be used if the level of anaesthesia becomes too light.

* **Additional Anaesthesia**

1) Flunixin meglumine

Weight = 4.5 kg

Concentration: 50mg/ml

Dose = 2.2mg/kg

Volume = (Dose × Weight) / Concentration

Volume= (2.2mg/kg x4.5kg)/ 50mg/ml

 =0.198ml ≈ 0.2ml

* **Maintenance (Continuous Rate Infusion –CRI)**

Rate of fluid delivery= 5ml/kg/hr

Drop factor= 20drops/ml

Drip rate = (4.5kg x 5ml x 20drops/ml)/60 = 450 drops /min

 450/60 = 0.125drops/sec

 =1drop/ 8 seconds



1)Ketamine HCl

Weight = 4.5 kg

Concentration = 100 mg/ml

Dose = 66mcg/kg/min

M= (66 mcg/kg/min x 4.5kg x 1000 ml) / (16.67 x (4.5kg x 5))

 =791.842mg

791.842mg /100 mg/ml = 7.9 ml ≈ 8ml

2) Lidocaine HCl

Weight = 4.5 kg

Concentration= 20mg/ml

Dose = 20 mcg/kg/min

M= (20mcg/kg/min x 4.5kg x 1000ml) / (16.67 x 22.5mg)

 = 239.9mg ≈ 240 mg

240mg/ 20mg/ml = 12ml

3) Xylazine HCl

Weight = 4.5 kg

Concentration = 20mg/ml

Dose = 0.66mcg/kg/min

M= (0.66mcg/kg/min x 4.5kg x 1000ml) / (16.67 x 22.5mg)

 = 7.918mg

7.918mg / 20mg/ml = 0.4ml

Total amount of drugs to be added to saline bag = 8ml Ketamine + 12ml Lidocaine +0.4ml Xylazine = 20.4 ml

Therefore 20.4ml saline must first be removed from the sterile saline bag before administering 20.4ml of drugs.

Table 2: Volume of drugs to be used for CRI

|  |  |  |
| --- | --- | --- |
| Drug | Dose(mcg/kg/min) | Vol to be injected (ml) |
| Ketamine | 66 | 8 |
| Xylazine | 0.66 | 0.4 |
| Lidocaine | 20 | 12 |
| Total volume | 20.4 |

**Emergency Drugs**

1) Tolazoline (Reversal of Xylazine – IV)

Weight = 4.5 kg

Concentration = 100mg/ml

Dose = 0.1mg/kg

Volume = (0.1× 4.5)/ 100mg/ml

 = 0.0045ml

2) Atropine (For bradycardia i.e. HR <30 bpm, ¼ dose IV and remainder IM/SC)

Weight = 4.5 kg

Concentration = 0.54 mg/ml

Dose = 0.04 mg/kg

Volume = (0.04 × 4.5) / 0.54

 = 0.3 ml

3) Epinephrine (For anaphylactic shock, cardiac resuscitation – IM)

Weight = 4.5 kg

Concentration = 1 mg/ml

Dose = 0.02 mg/kg

Volume = (0.02 × 4.5) / 1

 = 0.09 ml

|  |  |
| --- | --- |
| DRUG | WITHDRAWAL TIME (WDT) |
| Tolazoline | Meat – 30 days, Milk - None |
| Atropine | Meat – 14 days, Milk – 72 hours |
| Epinephrine | None |

Table 3: Withdrawal times of emergency drugs