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Intraosseous (IO) access in neonate with birth weight 2300 gr in cardiorespiratory arrest, a challenge in pre-hospital emergency care

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Background

Training

Initial Trauma Care SAMUR
EZ-IO Workshops

Experience

More than 300 cases
registered up to 2015

Incidence

11,883 critically ill patients

up to 3 years old: 84
up to 1 year old: 31

2007-2017

SAMUR - Protección Civil

Endorsed by

Manual of Procedures
SAMUR - Protección Civil

Use of the intraosseous route in a premature infant (Arch Pediatr 1998)

Nasimi A, Gorin P, Berthier M, Bousse-mart T, Follet-Bouhamed C, Oriot D

- Toulouse neonatal resuscitation unit.
- 34-week-old pre-term neonate.
- 2200 gr (14 days of life).
- Septic shock.
- Subclavian catheter was pulled out.
- IO access (20 G, distal hole, Cook).
- Left in place for 14 hours to infuse antibiotics, inotropic support, blood products and colloids.

Intraosseous (IO) access in neonate with birth weight 2300 gr

- Neonate weighing 2300 grams at birth after 37 weeks of pregnancy
- One-week old
- Cardiac arrest
- Central cyanosis despite of mechanical ventilation
- Vomit containing milk and blood
- Primary Health Care facility.
- Instrumental CPR

Size of the femur

2 failed attempts to obtain an intraosseous tibial access

- Causes:
- Low density bones
 - Vibrations during CPR manuevres

Femoral IO Access

Left in place for 50 minutes

Drugs infused: adrenaline, sodium bicarbonate, glucose (glycemia : 12 mg/dl = 0,666 mmol/l)

Conclusion

- In premature an low-weight critically ill infants, the use of the intraosseous route should be considered as the first option.
- IO device is safe and fast as long as the profesional has training on it.
- In premature and low-weight infants, distal femur should be considered better than proximal tibial access.
- DELTA team: senior nurses supporting and sharing experience with nurses on duty.

1995

Cook IO needle

1998

Bone injection gun (BIG)

2005

DELTA Team

SAMUR - Protección Civil

2007

EZ-IO device

Emergency Congress, Cuenca

Nurse evaluation of a new device for insertion of Intraosseous route

SEMES Congress, Tarragona

Survey about the use of the intraosseous route in the prehospital setting

2009

SEMES Congress, Benidorm

New EZ-IO device for intraosseous vascular access, an effective alternative in the out-of-hospital environment

2010

XII National Congress, Pamplona

Use, evolution and comparison between EZ-IO device in two prehospital emergencies services

Systemic fibrinolysis through intraosseous vascular access in ST-segment elevation myocardial infarction

Annals of Emergency Medicine

2012

SEMES Congress, Oviedo

Intraosseous route in severe trauma: four years of experience in SAMUR-Protección Civil

2013

Intraosseous access EZ-IO in a prehospital emergency service

Journal of Emergency Nursing

2014

SEMES Congress, Málaga

252 intraosseous insertions of EZ-IO device

2017

SEMES Congress, Alicante

Evolution of the humeral IO access with EZ-IO device SAMUR-PC 2015-2016