SIX-YEAR EXPERIENCE OF INTRAOSSEOUS ACCESS IN PREHOSPITAL STAGE

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Introduction

Establishment of State Emergency Medical Service (SEMS) in Latvia (2009) was the general precondition for implementation of unified equipment and new methods in prehospital emergency medical care provision. In January, 2011 devices for intraosseous (hereinafter - IO) access were introduced in all EMC crews throughout the state.

Regular and continuing training for IO establishment was provided for SEMS medical staff. According to the training IO has to be established in proximal tibial plateau in case when intravenous access is not available or feasible.

Objective

To summarize the results of the IO access in 6-year period in prehospital stage in Latvia with a purpose to evaluate the effectiveness of training.

Materials & Methods

Medical records of patients to whom IO access was established in prehospital stage in Latvia from 2011 to 2016 were analyzed.

Results

717 IO line placement attempts were performed to 685 patients from January 1, 2011 to December 31, 2016:

- 683 times with Bone Injection Gun, B.I.G. (Waismed);
- 34 times with EZ-IO® (Arrow®).

Age of patients varied from 19 days to 97 years (average 54.0 years, SD 25.3).

In 61 cases IO was established to children, including 22 infants.

Patient's condition

Cause of patient's condition

Successful insertion on the 1st attempt was achieved in 85.6 % (n=614) cases.

In 14.4% (n=103) cases IO access was not established due to different reasons. The second attempt was successful in 25 patients. 16 unsuccessful IO line insertions were observed in children, including 8 in infants.

Needle dislodgment was observed in 17 cases of initially successful IO access, thus diminishing **overall IO line success rate to 83.3 %**.

Most IO insertions were performed by physicians – 63.2% (n=453), while in 36.8% (n=264) of cases IO access was established by doctor's assistant.

Discussion

Overall IO access success rate for B.I.G. device in literature varies from 56% to 91% for adults and 73%-87.2% for children. Best results reported by Schwartz et al. In 2008. Our results show improvement of IO line placing accuracy during 6 year period.

Conclusions

1. Regular training improves success rate in establishment of IO access. Our results showed substantial increase of success rate of IO insertion on the 1st attempt from 78.9% **up to 85.6%**.
2. **First attempt success rate for B.I.G. device was 85.2%, including 85.9% for adults and 78.5% for children.**
3. Doctor's assistants had better results in establishing of IO access (OR=1.31; p=0.1). Overall 81.9% success rate was achieved by physicians and 85.6% - by doctor's assistants.
4. Vast majority of unsuccessful attempts were performed with B.I.G. device. There were only 2 unsuccessful IO insertions reported with EZ-IO®, but the number of EZ-IO® insertions (n=34) was too small to make statistical analysis.

References

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