Incidence of Local Anesthetic Systemic Toxicity in orthopedic patients receiving peripheral nerve blocks

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Introduction

Peripheral nerve blocks are increasingly used. However, despite low complication rates[1], concerns regarding local anesthetic systemic toxicity remain. Although recent studies suggest that this severe complication decreased considerably[2], there is a paucity of data about it on a national level. We sought to elucidate the incidence of local anesthetic systemic toxicity on a national level and therefore provide guidance toward the need for preparedness in daily anesthetic practice.

Material and Methods:

After approval by the Institutional Review Board of Mount Sinai Medical Center and the Hospital for Special Surgery we searched a large administrative database for patients who received peripheral nerve blocks for total joint arthroplasties from 2006 to 2014. Their discharge and billing data was analyzed for ICD-9 CM codes coding for local anesthetic systemic toxicity or surrogate outcomes including cardiac arrest, seizures and use of lipid emulsion on the day of surgery. Rates for these outcomes were determined cumulatively and over time.

Results

We identified N = 238,473 patients who received a peripheral nerve block within the study period. The cumulative rate of outcomes among these patients in the study period was 0.18%. There was a significant decrease of overall outcome rates between 2006 and 2014. Use of lipid emulsion on the day of surgery increased significantly in total knee replacement from 0.02% 2006 to 0.26% in 2014

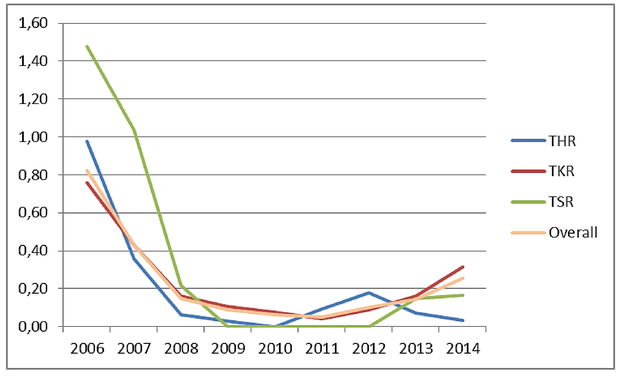

Figure 1 Cumulative rate of outcomes among patients receiving PNBs. Cumulative rate (%) of the studied outcomes (cardiac arrest, seizures and use of fat emulsion on the day of surgery combined) for each surgical procedure separately and for all surgical procedures combined. THR = Total Hip Replacement, TKR = Total Knee Replacement, TSR = and Total Shoulder replacement, Overall = THR, TKR and TSR combined[4].

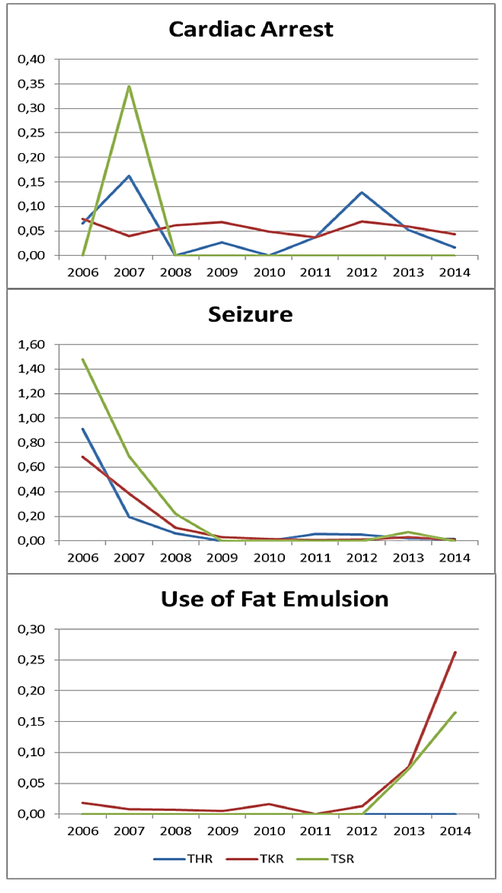

Figure 2 A - C. Incidence of outcomes among patients receiving PNBs – The graphs show the incidence of complications (%) itemized for the outcomes: A) cardiac arrest, B) seizure and C) use of lipid emulsion on the day of surgery[4].

Discussion

The incidence of local anesthetic systemic toxicity is low but should be considered clinically significant. Since it may cause substantial harm to the patient[3], appropriate resources and awareness to identify and treat local anesthetic systemic toxicity should be available wherever regional anesthesia is performed.

References

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