Clinical survey of current anaesthetic practice in caesarian section in a tertiary Greek hospital

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ABSTRACT

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Caesarean section delivery is among the commonest surgical procedures in our hospital. During an ESRA Hellas descriptive survey, conducted between March 1st and August 31st 2016, we decided to extend data collection with further enquiries, concerning the type and dosage of local anaesthetics, technical aspects, anaesthetic complications and their management, as well as neonate's Apgar score. In comparison to the national survey, the percentage of regional over general anaesthesia (69.2%, 30.8% respectively) was by far exceeded in our department (93%, 7% respectively) with single shot spinal anaesthesia being the most popular technique (96%) as compared to the national level (44.3%). Interestingly, the percentage of combined spinal-epidural anaesthesia in our department was extremely low compared to Athens and nationwide. The commonest complication after regional anaesthesia was inadequate level of anaesthesia (4%) while no accidental dural puncture was noted. Post-partum hemorrhage occurred in 2%. Neonates' general condition was very good. In a low human resources environment, due to personnel shortage, as worsened after the recent financial crisis, we strive to maintain a high-standard environment for the parturients of Northern Greece.

INTRODUCTION

We have noted an ongoing interest for the anaesthetic practices for caesarean section (CS) throughout Europe, which may differ from one country to the other for several reasons. In a very recent EJA article, a national survey in the Czech Republic and Slovakia has shown that national audits may allow and promote focusing on education and interstate coopera-

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tion[1]. Impressively, even if the two countries were united in the past, the rate of general anaesthesia (GA) for CS in the Czech Republic was lowered from 34 to 26% for elective and from 59 to 39% for non-elective CS. This was not the case for the neighboring Slovakia, where the rate for GA was already low. Besides, in a 2017 survey from Austria, the rate of routine use for regional anaesthesia for CS reaches almost 100% and in France has a similar trend[2].

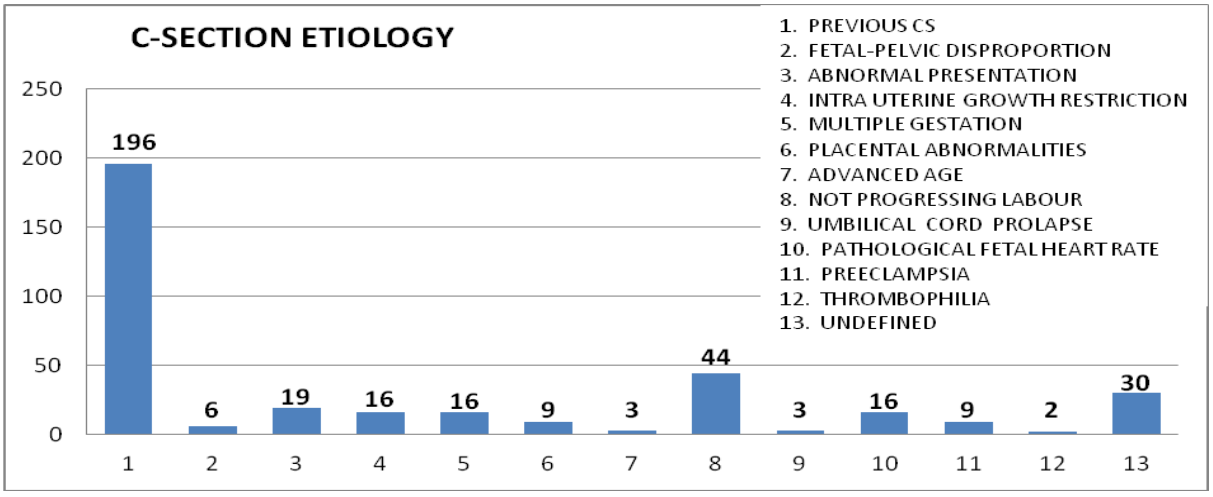
METHODS

In Greece, a nationwide descriptive survey has been conducted between March 1st and August 31st, 2016, endorsed by the Greek Section of the European Society of Regional Anaesthesia and Pain Therapy (ESRA-Hellas)[3]. During data collection for this survey, our department combined an extended questionnaire for prospective data collection where we have included further enquiries, concerning the type and dosage of local anaesthetics, anatomical site, technical aspects of regional anaesthesia (needle type and gauge), anaesthetic complications and their management, as well as neonate's Apgar score. The questionnaire was delivered to all anaesthesiologists performing any type of obstetric anaesthesia in our department for the aforementioned 6-month period. Eight consultant anaesthesiologists answered the questionnaire with a return rate of 100%. Our department serves in a tertiary hospital being a referral centre for obstetric cases from northern Greece, covering a population of 2.500.000 inhabitants (census 2012).

RESULTS

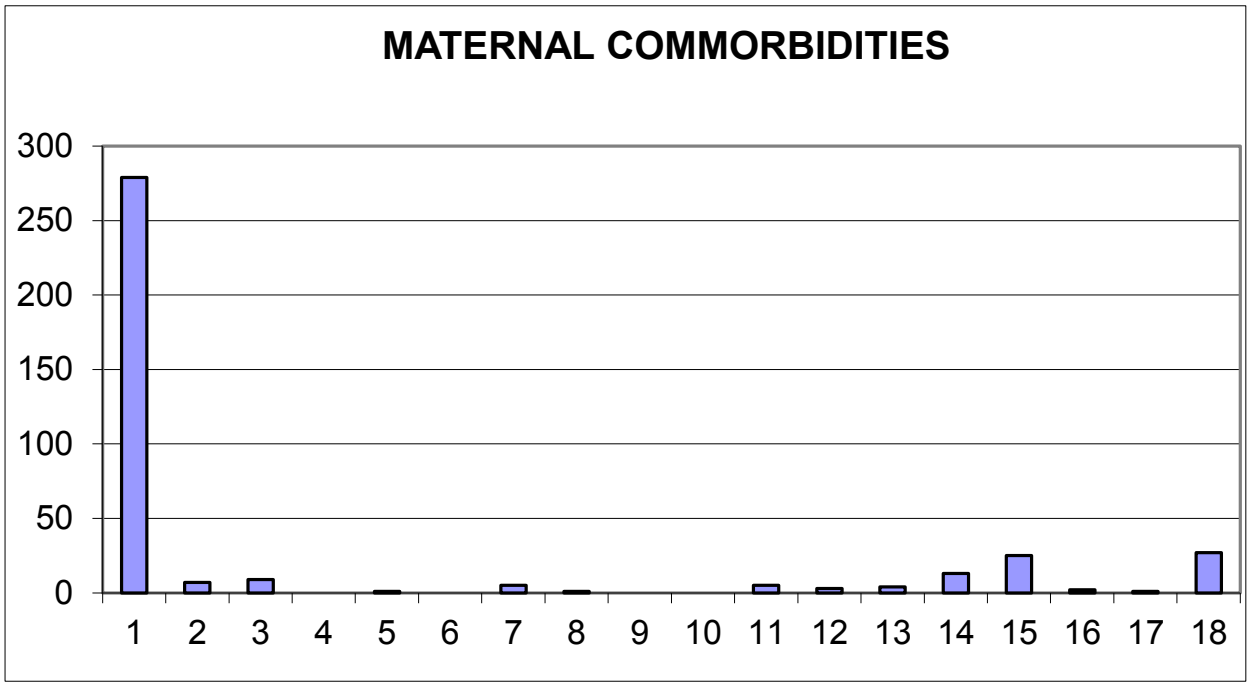
Between March 1st and August 31st, 2016, 412 CS were recorded due to several etiologies (Fig.1).

Figure 1. Reasons for 412 caesarean sections in the 6-months survey in absolute number *(in 43 cases no etiology was reported).*



The average age of the parturients was 31.3 years, average weight 83.31 kg, average BMI 33.67 and the average week of gestation was 39. They presented several commorbidities with gestational hypertension being the most prominent (Fig.2).

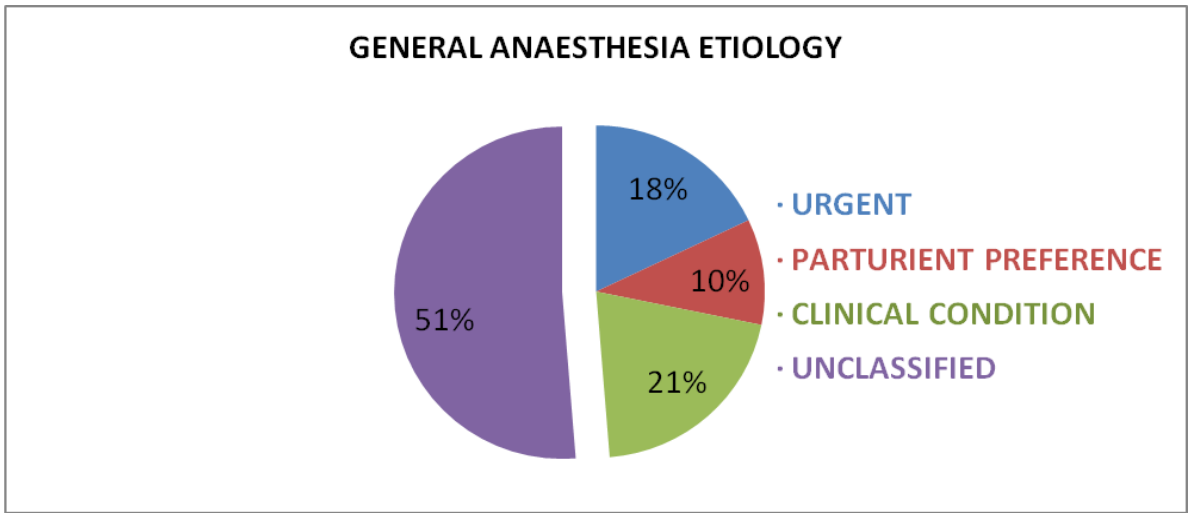
Figure 2. Maternal commorbidities in absolute numbers.



1-NONE (279),2-HYPERTENSION(7), 3-PREECLAMPSIA (9), 4-ECLAMPSIA (0), 5-HELLP (1), 6-MYOCARDIOPATHY (0), 7-VALVULAR DISEASE (5), 8-OTHER CARDIAC DISEASE (1), 9-VON WILLENBRAND DISEASE (0), 10-HYPOFIBRINOGENEMIA (0), 11-OTHER HEMATOLOGY DISORDER (5), 12-RESPIRATORY DIDEASE (3), 13-SMOKING(4), 14-DIABETES (13), 15-THYROID DISEASE (25), 16-NEUROLOGICAL DISORDER (2), 17-PSYCHIATRIC DISORDER (1), 18-OTHER (27).

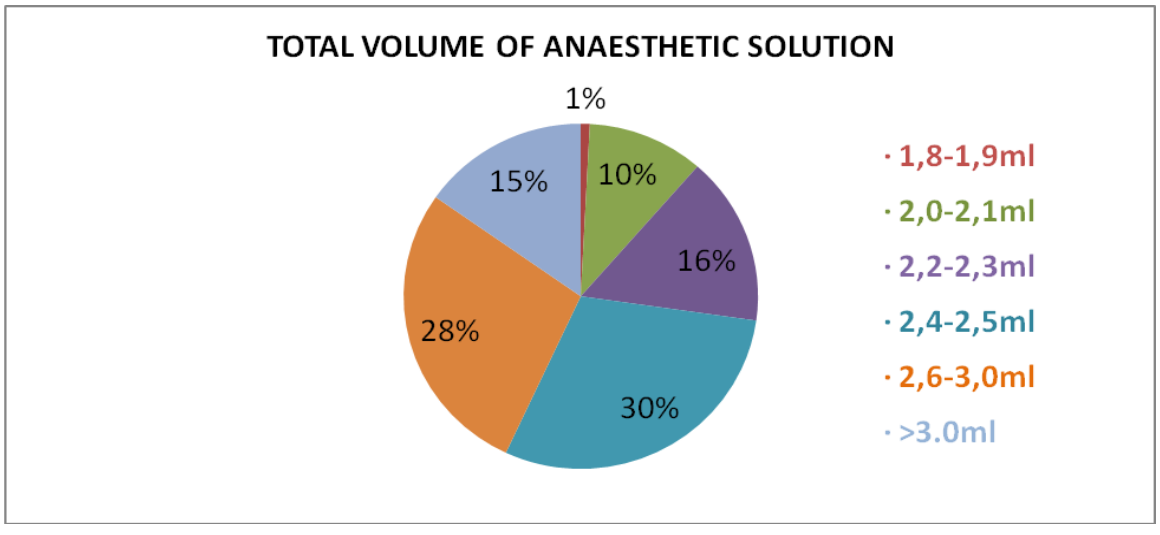
GA was used in 7% of CS while 93% underwent regional anaesthesia (RA). Single shot spinal anaesthesia (SA) was the most popular technique (96%), epidural anaesthesia (EA) was used in 3% and combined spinal-epidural anesthesia (CSEA) was used only in 1% of the RA CS cases. The reasons for GA were maternal clinical conditions (21%), refusal for RA or preference over GA (10%) emergency CS (18%) and interestingly, for unclassified reasons, decision to provide GA reached 51%. This last unexpected percentage most probably suggests a logistic weakness of the survey, in terms of thorough questionnaire completing in the stressful environment of obstetrics, when GA is decided (Fig.3).

Figure 3. Reasons for general anaesthesia administration in 28 (7%) over a total number of 412 caesareans.



In 99% of the cases a 25G Quincke (pencil point) needle with introducer was used. The preferred vertebral space was L3-L4 in 52.3% of the cases, while L4-L5 and L2-L3 were selected in 32.7% and 5.6% respectively. The preferred local anesthetic was levobupivacaine (93%) over ropivacaine (7%) and in 89% of the cases intrathecal fentanyl was added. In 58% of cases the solution was isobaric and 42% hyperbaric. The total volume of the local anaesthetic solution was 2.4-2.5 ml in 30% of the CS, 2.6-3.0 ml in 28%, while less than 1.8-1.9 ml or more than 3.0 ml was used in 1% and 15% respectively (Fig.4).

Figure 4. Volume of anaesthetic solution delivered for spinal anaesthesia.



Analgesia after CS was left at the discretion of the attending obstetrician and only in 5% of the cases anaesthetic consultation was sought. When EA or CSEA had been performed the epidural catheter was maintained for postoperative analgesia provided by anaesthesiologists. Complications related to RA included inadequate level of anaesthesia in 19 cases (4%), and pruritus in only 3 cases. Inadequate anaesthesia could not be attributed to performer's skills in all cases. No accidental dural puncture occurred in any of the parturients. PPH occurred in only 2% of the cases. All neonates had a normal Apgar score apart from one, with a low score (first minute 6, fifth minute 7 points) in a CS complicated with PPH.

DISCUSSION

According to a World Health Organization (WHO) systematic review, global increases in CS rates up to 10–15%, have rendered CS amongst the commonest surgical procedures in the obstetric setting[4]. Reasons for CS are maternal and fetal and are related to elective or urgent situations, like preeclampsia, umbilical cord prolapsed or a non-reassuring fetal heart rate[5]. Diverse maternal commorbidities may also result in decision for CS.

Pre-anaesthetic evaluation is crucial, because of the physiological changes and the clinical conditions that may occur during pregnancy, like diabetes mellitus, hypothyroidism and coagulation disorders. Although usually young and healthy, the parturient is classified as ASA Physical Status II, according to the American Society of Anesthesiologists (ASA). The anaesthesiologist's quiver has a variety of choices concerning the type of anaesthesia the parturient will be administered. Several obstetric anaesthesia guidelines worldwide, recommend spinal (SA) and epidural (EA) over general anaesthesia (GA) for the majority of caesarean sections (CS)[6].

General anaesthesia is only preferred if contraindications for regional anaesthesia (RA) are present. Since it entails the risk of maternal life-threatening complications such as difficult airway and aspiration pneumonia, it is recommended to be avoided whenever possible, in favour of RA[7]. High-income countries where this policy has been widely followed have achieved a rapid decrease in maternal mortality associated with general anaesthesia for caesarean section. On the contrary, in low- and middle-income countries, general anaesthesia still remains a risk factor for caesarean-related maternal mortality[8].

Concerning regional anaesthetic techniques, single shot SA is preferred over EA, due to its fast onset of action and easier technique. Hypotension following SA is being treated with sympathomimetic vasopressors. This is the main disadvantage of SA in comparison to EA, where the haemodynamic condition of the par-

turient may be more stable, due to dose titration.

In the national survey, the percentage of RA over GA was 69.2% over 30.8%. These numbers were by far exceeded in our department (RA 93%, GA 7%) with single shot SA being the most popular technique (96%) as compared to the national level (44.3%)[3]. Interestingly, the percentage of CSEA in our department (1% of RA) was extremely low compared to Athens (35% of RA) and nationwide outside Athens (7.9%)[3]. This may reflect a particular situation in our setting with less personnel and lack of available time per parturient due to fast patient turnover. On the other hand, since the surgical time was always short, the actual need for regional block prolongation was very rare.

In conclusion, in our department, RA is the commonest practice for CS. GA is only performed under special circumstances, as in the majority of European countries. The fact that single shot SA is the preferred choice for CS, may reflect the ease of the technique, in terms of fast and adequate anaesthetic result, in an environment with variable human resources, given that personnel shortage has been aggravated during the recent financial crisis. Nevertheless, with this technique, maternal and neonatal outcome was excellent. Epidural analgesia after CS required vigilance and at least one dedicated anaesthesiologist in the labour suite for analgesic effect and motor/sensory block assessment at least. When performed, no accidental dural puncture was recorded, reflecting hopefully a good level of technical skills of the anaesthetic team.

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Author Disclosures:

Authors Tzima M, Katsanoulas K, Bilali P, Panteleou K, Zemou S, Georgopoulou E and Katsika E have no conflicts of interest or financial ties to disclose.

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