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CORRESPONDENCE

Lumbar tattoos and epidural analgesia in 2018: time to let it go?

We read with interest the recent review by Zipori et al. about epidural analgesia (EA) and lumbar tattoos.[1] The authors stressed the lack of evidence regarding a risk of complications after neuraxial procedures. We hope to give some closure on what we think has been a contentious issue for anesthesiologists.

Since the initial positional letter by Douglas and Swenerton 15 years ago, no relevant complication has been reported in Western countries. In 2001, Kris Sperry, a pathologist experienced with tattooed skin, stated in the summer issue of the Society of Obstetric Anesthesia and Perinatology (SOAP) newsletter: ''You should have no concern whatsoever in placing a needle through a tattoo and into the spinal or epidural space ( ). There is really no danger at all in inserting a needle through tattooed skin (https://soap.org/past-newsletter.php, accessible by SOAP members only). In various letters to journal editors, we have discussed the histopathology of normal tattooed skin, to counter Douglas and Swenerton's hypothesis.[2,3] Iatrogenic epidermoid tumors are related to epidermal elements implanted into the subarachnoid space. In a healed tattoo, the epidermis is devoid of pigments.[4] Tattoo pigments are only found in the dermis, within fibroblasts, macrophages or free between collagen bundles of the dermis.[4] Pregnancy is one of the few contraindications for tattooing,[5] and as a consequence EA through a *fresh* tattoo during delivery, as documented by Zipori et al., is an infrequent occurrence.

Nicking the skin prior to inserting a needle is said to reduce the absorption of pigments,[1] but this has not been proven. Also, since pigments are spread out within the dermis,[4] to avoid potential contamination the skin nick must reach the hypodermis. If only a superficial nick is made in the dermis, there is a risk of pigment entrapment in the needle.

No coring of tattoo pigment has been observed *in vivo*. A recently published model, using fresh (less than one month old) tattoos in rabbits, failed to show a visible deposit of tattoo pigments in the meninges following neuraxial blocks, although long-term follow-up was not performed.[6]

We believe that there is no additional risk from performing neuraxial procedures through a healthy and healed lower back tattoo, and that there is no need for precautionary measures such as nicking the tattooed skin. Anesthesiologists should not withhold neuraxial techniques from women with lower back tattoos.

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The combination of corticosteroid and tocolytic therapy in a preeclamptic patient is a risk factor for the development of acute pulmonary oedema

Preeclampsia is associated with serious maternal and fetal complications. The incidence of pre-eclampsia has increased in recent years[1] and corticosteroids, in combination with tocolytic therapy, are frequently prescribed because of some specific indications. However, is this medical 'cocktail' as safe as we think?

We encountered a 35-year-old primigravid woman who developed severe acute respiratory distress at 32 weeks of twin gestation. She was hospitalised because

of cervical shortening and received an intravenous tocolytic (atosiban) and corticosteroid (betamethasone) for fetal lung maturation. During hospitalisation she developed signs of preeclampsia. Twenty-four hours after steroid administration, the patient developed dyspnoea and orthopnoea. Despite supportive measurements, her maternal status further worsened and an emergency caesarean section was performed under general anaesthesia. Two healthy infants were delivered after an uneventful intraoperative course. Postoperatively, mechanical ventilation in the intensive care unit (ICU) was necessary due to hypoxemia associated with a pleural effusion. Oxygenation improved during her short stay in the ICU and she was extubated four hours postoperatively.

The development of preeclampsia in a parturient with previously asymptomatic mitral valve insufficiency, and the combined use of a corticosteroid and a tocolytic drug, were thought to be the triggering factors for her cardiorespiratory decompensation.

Preeclampsia on its own is an important cause of acute pulmonary oedema during pregnancy.[2] There is conflicting evidence about the safety of corticosteroid use for fetal lung maturation at the same time as tocolytic administration,[3] with respect to the potential to cause maternal pulmonary oedema. Literature on the use of betamethasone in patients with preeclampsia is limited.[4] Amorim et al. concluded that antenatal corticosteroid therapy with betamethasone for acceleration of fetal lung maturity is safe and efficient in patients with severe preeclampsia in weeks 26–34 of gestation.[5] Magann et al. stated that the benefit of corticosteroids in preterm fetuses should be expected in women with preeclampsia.[4] Atosiban is an antagonist of uterus-specific oxytocin receptors, with minimal systemic activity. It results in a better maternal-fetal safety profile and reduced maternal morbidity compared with other tocolytic drugs.[6] Because of its molecular structure it has, at least theoretically, affinity for vasopressin receptors, so inhibition of anti-diuretic effects may cause congestive heart failure and hypertension.[6]

Literature about the use of atosiban in patients with preeclampsia is limited. However some old case reports describe the development of severe maternal pulmonary oedema after combined treatment with corticosteroids and tocolytics during pregnancy.[7,8] Ogunyemi studied the risk factors for the onset of pulmonary oedema in women with a preterm delivery.[9] He stated that pulmonary oedema during gestation occurs almost exclusively in patients treated with corticosteroid and tocolytic medication.[9]

Preeclamptic patients treated with tocolytics and corticosteroids may be at higher risk for the development of acute pulmonary oedema. Routine diagnostic echocardiography and lung ultrasound scanning, and continuous monitoring of arterial oxygen saturation with pulse oximetry, should be considered in these patients.

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