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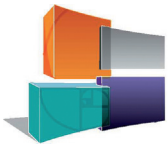

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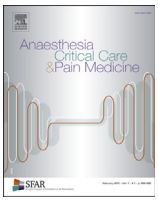

Letter to the Editor

Transverse subglottic diameter assessment in the third gestation trimester: Preeclampsia versus control

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During the pregnancy the upper airways change [1]. Because airway management for general anaesthesia is a key point in pregnant women, we have been very interested in the results reported by Leboulanger et al. [2]. They found, with the acoustic reflection method, that pregnancy was associated with a decrease in pharyngeal but not tracheal or laryngeal cross-sectional area. However, larynx cross-sectional was measured indirectly by this method and the study was conducted in normal pregnancies. Should we stop to use tracheal tube with a smallest size for general anaesthesia in pregnant women especially in case of preeclampsia? [3].

The measure by ultrasound of the Subglottic Cricoid Transverse Diameter (SCTD) at the level of the cricoid cartilage, which is the narrowest part of upper airways above the carina, has been validated [4]. Therefore, we decided in our centre, after informed consent and ethical committee approval (IRB 00010254-2016-055), to prospectively measure in women with preeclampsia ($n = 23$) and healthy women ($n = 27$) the SCTD by ultrasound.

The preeclampsia was moderate ($n = 15$), i.e. SBP $\geq$ 140 mmHg and/or DBP $\geq$ 90 mm Hg and proteinuria $>$ 0.3 g/24 h, and severe ($n = 8$) i.e. SBP $\geq$ 160 mmHg and/or DBP $\geq$ 110 mmHg and/or proteinuria $\geq$ 3.5 g/day (or strip+++) and/or renal insufficiency (serum creatinine $>$ 100 mmol/l or urine output $<$ 20 ml/h) and/or HELLP syndrome [5]. Healthy women had no symptom or risk factor for preeclampsia (hypertension, nephropathy, intrauterine growth retardation, foetal death, diabetes, history of preeclampsia).

The measures were performed by the same operator experienced in this field (>30 procedures) with a portable ultrasound Philips CX 50 POC and linear probe L12-3 set to 33 Hz and 5 cm deep in a transverse position according to the method validated by Lakhal et al. [4]. At least three ultrasound pictures were made during a slow breathing in the inspiratory phase to overcome variations related to breathing. On each picture, a measure of SCTD was performed retrospectively by an independent expert with the OsiriX software, blind of the context, healthy or preeclampsia. The measures were performed on the two best pictures, and the mean of measurement were noted. Twelve women out of sixty-two were not included because of a poor echogenicity, eight women with preeclampsia and four healthy women, i.e. 19% of ultrasound examination. The greater number of ultrasound pictures unusable due to a poor echogenicity in case of preeclampsia could be explained by different factors such as cervical adipose tissue, cervical oedema or a calcification of the larynx or cricoid cartilage. The cervical structures calcification begin around thirty years old and inducing a posterior acoustic shadowing [6]. In our study, subcutaneous oedema, characterised by tissue echogenicity increase, was probably the main cause inducing difficulties to explore the deep structures. The oedematous phenomenon usual in pregnant women in the third quarter of pregnancy is more common in women with preeclampsia [3].

The SCTD was similar in healthy women and with preeclampsia with respectively 12 ± 1 and 12 ± 1 mm ($P = 0.91$). In grouping all the data of the two groups, no significant linear correlation was found between the SCTD and the basal weight, late pregnancy weight, patient size or the BMI.

These results highlight a subglottic transverse diameter at the level of the cricoid identical in pregnant women with and without preeclampsia. It confirms by direct tracheal measurements the acoustic reflectometry data in healthy women [2]. Thus the difficult intubations reported in the literature in pregnant women [7] seems to be more related to the difficulty of glottis exposure due to a volume decrease of the oral and pharyngeal area more than a difficulty to introduce the endotracheal tube in a narrow trachea.

Disclosure of interest

The authors declare that they have no competing interest.

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