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LETTERS TO THE EDITOR—BRIEF COMMUNICATIONS

Pregnancies in tattooed female tattooists: an observational study

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Malformation

Dear Editors,

We found that there is currently much concern regarding the global impact on the human health of tattoo inks. It remains yet unknown whether tattoo inks can be responsible for any systemic toxicity [1–4]. Tattooists are a group of interest as they are usually heavily tattooed themselves and exposed daily to inks during their activities; in other term they should be in first line in terms of exposition to tattoo inks. We report here on the self-reported outcomes of pregnancies among female tattooists in an observational survey.

The methodology of the study is reported in detail elsewhere [5]. Briefly, all the active tattooists, members of the French tattoo union, were invited to take part in an Internet study regarding their health and their professional activity in November 2013. We inquired about demographic data, tattooing activity (years of tattooing practice, frequency of tattooing times per week and hours per day), and presence of own tattoos (tattooed body surface, presence of colors or not, year of the first tattoo). Female tattooists were asked specific questions regarding the outcomes of the pregnancies they had after having started their tattooist's activity. No local ethics committee approval was sought for this study.

Out of the 1000 members at the time, 448 responded (98 women, 21.9%). Twenty-five tattooists (25.5%) reported pregnancies after having started their activity. Twenty (80%) were aged between 25 and 45 years old. All were tattooed, 96% (23/24) had multicolored tattoos, covering a mean of 27.3% ± 15.7 (5–80) of their body surface. The mean tattooing activity was 14 ± 8.1 (3–23 year). Twenty-three (92%) worked 4 days or more per week for a mean daily activity of 5.2 ± 0.3 h of tattooing. Eighteen (72%) got their first tattoo done before the year 2000.

The number of pregnancies per woman ranged from 1 (n = 20, 80%) to 5 (n = 1). The total number of pregnancies was 36, including a twin pregnancy. Five tattooists reported eight spontaneous abortions during the first 3 months of pregnancy. One suffered miscarriages of all her three pregnancies during the first trimester. She did not mention whether any medical explanation was found. One tattooist had two spontaneous abortions out of five pregnancies and another had a voluntary termination of the pregnancy. Three tattooists (12%) did not have any child. Of those with on-going pregnancies, two tattooists reported gestational hypertension/toxemia at the end of their pregnancies. According to the responses, no malformations or other serious diseases have been diagnosed at birth or until now in living children. The patients who had miscarriages had a mean tattooed surface of 19% ± 9.5. The reported diseases of the 25 tattooists are summarized in Table 1.

Table 1
Characteristics and self-reported pathologies.

Age group	Total (%, n = 25)
16–25 yo	4%, 1
25–35 yo	48%, 12
36–45 yo	32%, 8
46–55 yo	16%, 4
56–65 yo	0
Tobacco smoker or past smoker	68%, 17
Cardio-vascular co-morbidities	
Hypertension	0
Overweight/obesity	20%, 5
Non insulin dependant diabetes	0
Insulin dependant diabetes	0
Dyslipidemia	0
Respiratory diseases	
Asthma	16%, 4
Chronic bronchitis	8%, 2
Allergies	
Allergic rhinitis, sinusitis, conjunctivitis	16%, 4
Allergic contact eczema	4% 1
Atopic dermatitis	8%, 2
Rheumatic diseases	
Finger pain	52%, 13
Back pain	72%, 18
Back arthrosis	4%, 1
Muscular pain	32%, 8
Carpal tunnel syndrome/tingling in fingers	28%, 7
Raynaud phenomenon	16%, 4
Vision and hearing problems	
Vision issues (presbytia, myopia, astigmatism)	52%, 13
Hear loss	12%, 3
Tinnitus and acouphenes	4%, 1
Cephalagias/migraines	44%, 11
Depressive symptoms	12%, 3
Hepatitis B or C	
Auto-immune/inflammatory diseases	0
Cancer	0
Skin cancer, other cancer	0
Leukemia, lymphoma	0

To our knowledge, the outcomes of pregnancies among tattooed individuals have never been assessed before. We wondered whether tattooed women would report possible complications during their pregnancies that would shed light on possible diffusion of tattoo ink particles through the placenta. Limitations of our study include bias of selection and recollection, and no control group. However, we recruited 25 tattooists with colored tattoos covering in mean a third of their body-surface out of a cohort of 445 individuals. Tattooists are still mainly men, but the feminization of the profession is on its way with more young women starting as tattooist. We could see more pregnancies among women tattooists in the future. According to our study, pregnancies complications among women tattooists seem at a background level with no argument to support that tattoo inks components/byproducts could impact on the pregnancies. Further studies with control group are warranted to confirm or not these observations.

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The author designed, wrote and drafted the manuscript.

Competing interest statement: N. Kluger is a honorary member of the French tattoo union. None declared otherwise.

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Can the Valsalva maneuver during delivery effort cause a recurrence of spontaneous intracranial hypotension?

Dear Editors,

Spontaneous intracranial hypotension (SIH) typically results from spontaneous cerebrospinal fluid (CSF) leak, often at spine level. SIH is characterized by low CSF pressure, orthostatic headache, and characteristic abnormalities on MRI. Annual incidence is estimated to be 5/100,000 (peak age around 40 years). Women are affected more than men by a ratio of 2:1[1].

CSF leaks cause often remains undetermined. Nevertheless, significant minority of patients shows clinical or neuroradiological features suggestive of the presence of connective tissue matrix disorder [2]. Many patients have joint hypermobility or have ectatic dural sacs, multiple meningeal diverticula, or dilated nerve root sleeves. A trivial previous trauma caused by the Valsalva maneuver such as coughing, sneezing, vomiting, pulling, pushing, and lifting is sometimes reported in a minority of these patients. Delivery effort has been rarely reported as a causal factor of SIH, as well [3]. Treatment ranges from conservative management, (bed rest, overhydration and caffeine), to invasive procedures, (autologous epidural blood patch (EBP) [4], computed tomography (CT)-guided fibrin glue injection at the leak site and open surgical intervention). Recurrence may occur with variable frequency and time relapse from the previous SIH, ranging from weeks to years.

From among 291 patients with SIH (according to the International Classification of Headache Disorder (2nd edn) 2004 criteria for headache attributed to spontaneous (or idiopathic) low CSF pressure) [5] referred to us from April 1992 to May 2014, five women mean age 30.4 years (range 25–38 years) who had spontaneous vaginal delivery after SIH were observed. All the women complained about orthostatic headache. In a woman orthostatic headache was triggered by repeated pollen allergy sneezing. One patient had diplopia due to 6th right cranial nerve paresis. A woman was suffered from joint hypermobility (Fig. 1) and two presented SIH during pregnancy (16 and 17 weeks' gestation respectively). General and neurological examination were normal in all patients. Brain CT scan (4 women) found small subdural fluid collections in two patients and was normal in the other two. Gadolinium brain MRI (3 patients) showed diffuse pachymeningeal enhancement in all cases (Fig. 1), as well small subdural fluid collections in a case and brain sagging in another (Fig. 1). Brain MRI without contrast performed in a pregnant woman, detected a diffuse pachymeningeal thickening. Spinal MRI (2 women) showed cervical pachymeningeal enhancement and cervical venous plexus engorgement. Lumbar puncture (2 women) pointed out a low CSF opening pressure. A woman, 16-weeks'-pregnant, was treated with EBP with immediate disappearance of orthostatic headache. The patient suffering from joint hypermobility was treated with two EBP, as SIH relapsed seven days after the first EBP because of physical effort (sexual intercourse).

The other three women (1 pregnant) were treated with conservative management and orthostatic headache disappeared in about a month. The two pregnant patients at the time of SIH delivered about 5 months later while the other three women delivered at a median of 36 months (range 24–63 months) after SIH episode. All the women were recommended to perform spontaneous vaginal delivery. No one was underwent epidural analgesia during labor. All infants were healthy. None of the women showed recurrence of SIH by Valsalva maneuver during delivery effort. Post-labor follow-up median was 12 months (range 6–154 months).

Although few cases of SIH caused by delivery effort are described in literature, our observation shows that Valsalva maneuver during delivery effort does not cause a recurrence of SIH. On the other hand we believe that perform vaginal delivery rather than cesarean surgery should be preferable, as the latter is not risk free. Moreover, even though a recurrence of SIH can occur,