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The cosmetic use of skin-lightening products during pregnancy in Dakar, Senegal: a common and potentially hazardous practice

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Summary Many women of childbearing age from sub-Saharan Africa use topical skin lighteners, some of which present a risk of toxic systemic effects. The goals of this study were to evaluate, in this environment, the frequency of this practice during pregnancy, as well as eventual consequences on pregnancy. Ninety-nine women from 6 to 9 months pregnant were randomly selected among those attending a standard maternal centre in Dakar for a prenatal visit. Investigations consisted of questions about the use of skin lighteners, a standard clinical examination, follow-up until delivery and a morning blood sample for plasma cortisol levels. Sixty-eight of the 99 selected women used skin lighteners during their current pregnancy, the main active ingredients being hydroquinone and highly potent steroids (used by 64 and 28 women, respectively). No difference in the main outcomes of pregnancy were found between skin-lightener users and the others; however, women using highly potent steroids, when compared with those who did not, had a statistically significant lower plasma cortisol level and a smaller placenta, and presented a higher rate of low-birth-weight infants. Skin lightening is a common practice during pregnancy in Dakar, and the use of steroids may result in consequences in the mother and her child.

1. Introduction

The use of skin-lightening products for cosmetic purposes is a common practice in dark-skinned women from sub-Saharan Africa (Godlee, 1992). Studies conducted in western African capitals revealed that 25 to 67% of adult women were using such products (Mahé et al., 1993; Wone et al., 2000). The main active ingredients used are hydroquinone,

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highly potent corticosteroids and mercury salts (Mahé et al., 2003). Several complications linked to this practice have been described: mainly various skin disorders (Mahé et al., 2003), but also general complications due to a systemic absorption of certain compounds, such as nephritis or neurological disorders secondary to mercurials (Barr et al., 1972; Morbidity and Mortality Weekly Report, 1996). More recently, concerns have been raised about the systemic absorption of corticosteroids (Keane et al., 2001; Perret et al., 2001). Complications associated with glucocorticoid use for bleaching purposes, such as hypercorticism or adrenal insufficiency, have been reported (Sobngwy et al., 2003). It has also been suggested that the practice of bleaching is a potential risk factor for hypertension and diabetes mellitus (Raynaud et al., 2000).

Preliminary observations suggested that, in Senegal, pregnancy might be a period of high risk for the use of skin-lightening products, especially during the third trimester (Mahé et al., 2003). The objective of this study was to evaluate the frequency of the use of bleaching products for cosmetic purposes during pregnancy in Dakar, Senegal, as well as an eventual impact on pregnancy and its outcome.

2. Materials and methods

2.1. Selection of women

From January to June 2003, every alternate day, the pregnant women waiting for a prenatal visit at the maternity unit of our institution (Institut d'Hygiène Sociale, Dakar, a maternal and child unit offering prenatal and peripartum care and standard delivery) were considered for inclusion. The inclusion criteria were to be 6 to 9 months pregnant and to live in the administrative district of the maternity centre (in order to facilitate blood sampling and follow-up). The inclusion was performed before questioning about an eventual cosmetic use of bleaching products; to be treated for a medical reason with steroids (either orally or topically) was an exclusion criterion. A free and informed consent was required before inclusion; the study was conducted under the auspices of the Institutional Review Board of the Institut d'Hygiène Sociale (Dakar, Senegal).

2.2. Investigations

Once included, each woman was questioned about the use of skin-lightening products before and during the current pregnancy. The product names and modalities of applications were recorded. Changes in those modalities during this pregnancy were recorded, as well as the motivations behind the changes. To determine the nature of the active principles, we consulted the product notices and the available data from the literature or, when previous data were missing or imprecise, took samples of available compounds for the analysis; we looked for the presence of steroids and hydroquinone as previously described (Mahé et al., 2003).

Standard clinical examination and investigations were performed by a midwife during the visit corresponding to the inclusion in the study; a urine sample was tested for albumin. Each woman was questioned and her medical chart was reviewed to identify significant events since the beginning of the pregnancy, as well as to evaluate education and socio-economic levels. With the woman's consent, a blood sample was collected on the next day between 08:00 and 10:00 hours, and tested for plasma cortisol (competitive binding immunoenzymatic assay) and fasting blood glucose level. The final outcomes of pregnancy (i.e. gestational age at delivery, method of delivery, status of the mother, status and weight of the newborn and of the placenta) were obtained from delivery registers. Eventual medical events that had occurred between the inclusion visit and delivery, either during routine prenatal visits or others, were recorded from medical charts.

2.3. Statistical analysis

Among the women who were included, those who used bleaching products during this pregnancy were compared with those who did not use bleaching products, and those who used highly potent corticosteroids were compared with those who did not use highly potent corticosteroids, with respect to recorded variables (the latter analysis did not include data from women who had used products of unknown or imprecise composition, such as undetermined steroid class). We used χ^2 and Fisher's two-tailed exact tests for qualitative variables, and the Kruskal-Wallis H test for quantitative variables. A regression coefficient r was calculated in order to look for an eventual correlation between declared duration of use of bleaching products and other quantitative variables (plasma cortisol level, weight of placenta and of the newborn).

3. Results

3.1. Description of the sample

From January to June 2003, 99 women were included in the study. During the same period, 1190 women delivered at the maternity centre, while 650 women were seen for a prenatal visit. The mean number of routine antenatal visits for the women who were included (including the one corresponding to inclusion) was three (SD = 1). The analysis of delivery was based on data from 89 women (no data were available for 10 who were lost to follow-up). Sixty-four women gave consent for a blood sample (the proportion of bleaching products use did not differ between the women from whom a blood sample was obtained and the others).

Considering the 99 included women, mean age was 25.5 years old (range 15—42) and mean parity was 1.3 (36/99 women with first pregnancy, range 0—8). Twenty-two women were seen during the sixth month of pregnancy, 26 during the seventh month, 41 during the eighth month, and 10 during the ninth month. One woman gave birth to twins (data concerning weight of newborns and placenta for that woman were excluded from the statistical analysis for these parameters). None of the women were smokers.

3.2. Use of bleaching products

Sixty-eight of the 99 included women (68.7%) were found to use lightening products for a cosmetic purpose during the present pregnancy. The active principles identified were