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Brief report

Childhood sexual abuse and hypothalamus-pituitary-thyroid axis in postpartum major depression

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ABSTRACT

Objective: The aim of this study was to investigate the association between early life events in women with postpartum major depression and concomitant hypothalamus-pituitary-thyroid axis disturbances (HPTD), thyroid dysfunction or presence of thyroid antibodies.
Methods: Serum total tri-iodothyronine (TT3), free thyroxin (FT4), Thyroid-stimulating hormone (TSH), Thyroperoxidasa (TPOAb) and Thyroglobulin (TGAb) autoantibodies was measured in 103 major postpartum depressive women. HPTD was defined as TSH and/or T4 abnormal, presence of thyroid autoantibodies and alterations of TT3. All women were assessed with a psychiatry structured interview for DSM-IV. Early Trauma Inventory Self Report, sociodemographic, reproductive, psychosocial and psychopathological variables were also assessed.
Results: Sixty three percent of women had suffered childhood trauma, which was childhood sexual abuse in 27.2%. Childhood sexual abuse in postpartum major depression women increased the risk for thyroid dysfunction (OR = 5.018, 95%CI = 1.128–22.327), presence of thyroid autoantibodies (OR = 2.528; 95%CI = 1.00–6.39) and HPTD (OR = 2.955; 95% CI = 1.191–7.32). Moreover, age over 34 (OR = 12.394; 95%CI = 1.424–107.910) and previous postpartum depression (OR = 8.470; 95%CI = 1.20–59.43) increased the risk for thyroid dysfunction in postpartum depression.
Limitations: The study design does not allow us to know the direction of the association and there is a lack of previous assessment of current posttraumatic stress disorder.
Conclusions: According to the present findings, childhood sexual abuse may represent an important risk factor for the presence of thyroid autoantibodies and HPTD in women with postpartum depression.

1. Introduction

Early life stress induces acute and chronic changes in the activity and regulation of the immune, endocrine, autonomic and central nervous systems. These changes have been associated with an altered responsiveness to stress re-exposure through a long-lasting sensitization of these

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systems. Postpartum period allow to test the recovery capacity in front of a re-exposure to neurohormonal stress.

Childhood maltreatment including sexual abuse and other early adverse experiences have been associated with depression (Chapman et al., 2004), and postpartum depression (Records and Rice, 2005), immunological disorders (Felitti et al., 1998), inflammatory response (Danese et al., 2008), and hypothalamus-pituitary-thyroid axis disturbances (HPTD) (Girdler et al., 2004). Moreover, depression (Joffe, 2006) and postpartum depression (Pop et al., 1991) are associated with HPTD as well as with increased serum levels of pro-inflammatory cytokines (Robles et al., 2005).

This study was designed to evaluate for the first time the association between early life events and HPTD in postpartum major depression.

2. Methods

2.1. Study design and subjects

Women diagnosed of postpartum major depression consecutively attended at the Perinatal Psychiatric Unit of a teaching hospital (October 2002–July 2007) were eligible to participate in a cross-sectional study.

The inclusion criteria were major depressive episode DSM-IV (SCID; First et al., 1997), and we defined the postpartum period as the first six months after delivery (Pugh et al., 1963). The exclusion criteria were current treatment with drugs that can influence the thyroid function, history of alcohol or/and substance abuse within the past six months, previous thyroid disease and being illiterate. Women, whose children died after birth, were also excluded.

Written informed consent was obtained. The Ethics Committee of Research of the Institution approved the study.

2.2. Clinical assessment

We collected data of sociodemographic, reproductive and psychopatological (previous treatment, affective disorders or postpartum depression, age at the first episode, and history of family affective disorders).

A clinical psychologist confirmed major depression episode using the depression module of the Structured Clinical Interview for DSM-IV (SCID; First 1997). They were also assessed with the Edinburgh Postnatal Depression Scale (Cox et al., 1987; Garcia-Esteve et al., 2003), the Hamilton Depression Rating Scale-21 item (Hamilton, 1962); the State Trait Inventory-State (Spielberger et al., 1970) and the Risk Suicide Scale (Plutchik et al., 1989).

The Spanish validated version of The Early Trauma Inventory Self Report (ETI-SR; Bremner et al., 2007; Plaza et al., submitted) was used to assess the presence and severity of trauma in early childhood. It is a 56-item inventory that assesses types of sexual (ETI-S), physical abuse (ETI-P), emotional neglect (ETI-E) and general trauma (ETI-G), and a total score (ETI-T). The Saint-Paul-Ramsey Questionnaire (SPRQ; Paykel, 1983) was used to study the number of life events experienced in the last year. Moreover, the Marital Adjustment Test (Locke and Wallace, 1959) was administered.

2.3. Laboratory tests

A 10 mL blood sample was obtained 8.00–9.00 a.m by routine venipuncture from all women before initiating any treatment. Thyrotropin (TSH) was analyzed using a two-site sandwich enzyme-immunoassay with espectrophotometric procedure (Bayer Centaur) (reference range 0.40–4.0 mIU/L); free thyroxin (FT4) and total tri-iodothyronine (TT3) using an enzyme-immunoassay with espectrophotometric procedure (Thecnicon Immuno1, Bayer) (reference ranges 0.80–2.0 ng/dL and 0.97–2.06 ng/mL respectively); thyroid autoantibodies antithyroperoxidase (TPOAb) and antithyroglobulin (TGAb) using two-site solid phase sandwich enzyme-immunoassay by indirect quimioluminiscence (Bayer Centaur).

Thyroid dysfunction (TD) defined as: a) biochemical overt hyperthyroidism (TSH < 0.40 mIU/L and FT4 > 2.0 ng/dl); b) subclinical hyperthyroidism (TSH < 0.40 mIU/L and normal FT4); c) overt hypothyroidism (TSH > 4.0 mIU/L and FT4 < 0.80 ng/dl); and d) subclinical hypothyroidism (TSH > 4.0 mIU/L and normal FT4). Titres of TPOAb and/or TGAb > 60 IU/mL were considered positive. HPTD were considered in the presence of thyroid dysfunction, positive titres of TPOAb and/or TGAb (Ab+), and altered serum TT3 concentration.

2.4. Statistical analysis

The total sample was distributed in three groups depending on their thyroid status (TD, positive autoantibodies or HPTD). The normality of the variables was evaluated using the Kolmogorov–Smirnov test. Comparisons between groups were analyzed by Chi-Square test or Mann–Whitney *U* test. Multivariate logistic regression was used with a backward selection strategy, including those variables with a probability to enter in the model less than or equal to 0.1, setting in a probability model less than or equal to 0.05 for not exit. The regression exponential coefficients were interpreted as odds-ratios and 95%CI. Level of significance was established at 0.05. Statistical analysis was done using SPSS v.14.0.

3. Results

3.1. Sample

We studied 103 women with major postpartum depression, with a mean age (SD) 33(4.4) years. The 43% had a secondary level of education and 36% a high level. The 91% were married, 59% worked during pregnancy and only 19% had a low income. The 60% were primiparous, 24% had a history of previous abortion, 30% had an unintended pregnancy and 63% breastfed. The 54% had psychiatry history, and 5% had previous postpartum depression. A history of family affective disorder was found in 21%. The mean age onset of the first episode was 30 (6.5) years old. Thirty-eight percent of women had at least one life event measured by the SPRQ in the last year and 40% had two or more. The 63% had experienced childhood trauma (ETI-SR): 54%, general trauma, 37%, physical, 48% emotional and 27.2% sexual abuse.

Nine percent had TD: 6% hyperthyroidism, 1.9% subclinical hypothyroidism, 1.0% an elevated TT3, and 2.9% a low TT3 level without other thyroid hormonal abnormalities. Thirty