Oxytocin response to an attachment-related stressor in women with respect to depressive symptoms.

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Introduction

In attachment research, there is a huge interest in oxytocin (OT) as a stress-related hormone, which seems to alter stress reactions in such a way as to promote more pro-social coping strategies (Striepen, et al., 2013). However, in prior research, little attention was given to possible modulating factors that could play a major role in OT response to attachment-related stressors. Therefore, first, the attachment system was activated by administering the Adult Attachment Interview (AAI, George, Kaplan & Main, 1985). The AAI is the “gold standard” in attachment research to investigate the narrative reactions of adults when asking them about their relationship with their primary caregivers in early childhood. Attachment relevant questions regarding the topics illness, misery, loss, and trauma trigger the attachment system of a person and lead to different narrative patterns, which are associated with different physiological reactions (Dozier & Kobak, 1992, Rosman et al., 2004, Scheidt et al., 2000). The focus in the cited studies was the investigation of the relationship between narrative patterns and changes in heart rate, cortisol, or skin conductance measured before, during and after the administration of the AAI. To our knowledge, there is no published study to date which investigates the change of OT secretion induced by the AAI. It is also known that the severity of depressive symptoms has an impact on the OT release and regulation (e.g. Cyranowski et al., 2008, Scantamburlo et al., 2007). Moreover, OT is also known for its function to reduce stress (Unna-Möbius, 1997).

As a consequence, we hypothesize:
1. The oxytocin level increases after conducting the interview with at least small effect size.
2. The presence of at least mild depressive symptoms leads to a lower oxytocin increment.

Sample & Methods

Data was collected as part of an intervention study at the Dr. von Hauner Children’s Hospital in Munich between 2013 and 2014. A subsample of N=14 women (34 to 55 years, SD=5.9 years) were asked to participate in the AAI in order to activate their attachment system. The average duration of the AAI was m=87.21 min (SD=29.02 min; min=44 min max=136 min). Except for one, all participants did not consume hormone preparation, however this was no outlier whatsoever. Framing the AAI, subjects were provided 4 saliva samples: before, immediately after, 15 minutes after and 30 minutes after the AAI. Samples were immediately frozen and were stored at -80°C. Due to sample characteristics and study design it was not possible to administer the interview at a standardized time. Samples were collected between 8:30 am and 6:30 pm. 65% of the pre AAI samples were collected pm. After critical descriptive examination we could not find any statistical evidence that diurnal variations influence the main outcomes in this study. Saliva oxytocin was extracted and quantified by a highly sensitive and specific radioimmunoassay (RIAßgesis, Munich, Germany). To control for possible effects, all women compiled the BDI-I to screen for depressive symptoms, by which they were split into two groups: one without (cutoff BDI-II ≤ 8) and one with clinically relevant depressive symptoms (cutoff BDI-II ≥ 9; Back, Steer & Brown, 1996). To investigate the oxytocin increment, absolute differences were calculated (post AAI - pre AAI). To control for the oxytocin baseline value, oxytocin concentration pre AAI was used as covariate.

Results

Figure 1 shows the individual OT profiles. In 75% of the cases an increment of OT from pre to post OT is obvious. All cases showed a variance of at least 0.1 pg/ml. comparing pre and post OT levels (M_pre,18.4; SD=12.12, min=0.19 max=8.31; M_post,2.62, SD=2.90, min=0.41 max=10.19). 15 and 30 minutes after the end of the interview, the progression of OT secretion is heterogeneous, with a trend to decrease, but the mean of 30 minutes after AAI is still 20% higher compared to the mean pre AAI. Figure 2 illustrates the OT increment from pre AAI to post AAI (Hypothesis 1). A repeated measures t-test (T=2.05, df=13, p=0.03 one-tailed) showed a significant difference between the oxytocin levels before and immediately after the AAI with an effect size of d=1.6 (medium effect). The mean relative OT increment pre AAI to post AAI is 40%. After conducting an ANCOVA to investigate Hypothesis 2, results show that for those women with at least mild depressive symptoms, the increment of oxytocin was significantly lower (F=2.05, df=1/13, adjusted alpha=0.23, p=0.15, 1-β=0.6) with an effect size of partial η² = .18, denoting a strong effect (Figure 3).

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Discussion

Data supports the hypothesis that the AAI is an attachment stimulus strong enough to provoke a significant endogenous oxytocin response in non-depressive women. On average the OT level in women with self reported mild to severe depressive symptoms increases by only 11% percent compared to the increment of 58% in non-depressive participants. One plausible explanation for the lower increment of oxytocin in depressive women is the effect of a suppressed attachment system on endocrine function. Another study conducted on the same sample will examine the relationship between the quality of narrative patterns (secure vs. insecure) caused by the attachment-related questions of the AAI and the oxytocin response. However, the results of this pilot study should be interpreted with caution. It is important to consider various limitations to the current study. First, the sample is of small size and highly selective. All participants were mothers of in-patient early traumatized children. Second, saliva samples were not collected at standardized times (daytime and menstrual cycle), so diurnal and menstrual variations can influence OT concentrations. Third, an additional OT baseline was not collected and to obtain the quality of the AAI, it was not possible to collect OT samples during the interview, which would be very interesting regarding the OT half-life of 3-6 minutes (Grewen et al., 2010). Fourth, the AAI was administered by therapists familiar to the interviewees, and it could be, that the OT increment is influenced by interviewer variables such as warmth or being connected to someone.

REFERENCES: