Acute stress response in cocaine dependent subjects with comorbid depression

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Introduction

An important challenge in cocaine dependent subjects is to discriminate between induced and independent depression. Stress plays an important role in both, depression and substance use disorders. Acute stress response could be a useful biomarker to differentiate primary from induced depression in cocaine dependent subjects.

Objectives

To evaluate some components of the acute stress response in cocaine dependent patients with independent or substance-induced major depression.

Subjects and Methods

Cocaine dependent patients (DSM-IV-TR), with comorbid independent major depression or with comorbid cocaine-induced major depression, and healthy controls. Acute stress response was assessed by the Trier Social Stress Test (TSST). Plasma cortisol and alpha-amilase levels and anxiety scores (using STAI-S) were measured before TSST (pre-TSST), immediately after TSST (post-TSST) and 30 minutes later (post-30'TSST). The data were analyzed with repeated measures ANOVA and post hoc analysis using the Bonferroni test.

Results

A total of 25 cocaine dependent subjects and 21 healthy controls were included in the study (Table 1). The acute stress response to TSST is described in Table 2. In cocaine dependent subjects, those with independent depression showed a stress response similar to controls, but cocaine-induced depression subjects did not present reactivity to stress, in both, cortisol levels and STAI scores.

Conclusions

These preliminary results show a different response to acute stress between patients with independent or cocaine-induced major depression. Stress response could be a biomarker to differentiate induced or primary depression in cocaine dependent subjects.

Table 1- Sociodemographics and clinical characteristics of the sample.

	Controls N=21 (mean±SD)	COC+PMD N=16 (mean±SD)	COC+IMD N=9 (mean±SD)
Men (n)	15	12	4
Age (years)	32,81±5,026	45.06±7,79	37,67±11,42
Age last episode (mean+sd, years)		41,88±8,59	29,50±6,36
Number of episodes		2,27±1,28	6,22±7,85
Months in remission since last episode		24±41,34	26,80±34,75
Antidepressant treatment (n, %)		13	6
HDRS[a]	0,57±1,17	2,19±2,23	0,44±0,88
HARS[b]	5,14±3,72	6,38±4,60	4,88±5,083
STAI-E[c]	11,14±7,53	22,44±12,60	15,25±9,98
STAI-R[d]	9,10±5,51	27,38±11,42	22,25±11,16

Table 2- Changes in Cortidsol, alfa-amilase and STAI-S at baseline and after to TSST.

	Pre TSST (Mean+DS)	Post TSST (Mean+DS)	Post-30 TSST (Mean+DS)	Post-60 TSST (Mean+DS)	Post-90 TSST (Mean+DS)	ANOVA (Time) P*
Controls						
Cortisol	9,15±3,57	12,64±4,42	10,59±3,92	11,45±3,36	10,98±3,67	>0.001 [a,e]
α-amilase	55,8±24,89	67,47±32,64	64,43±31,28	66,76±30,68	67,14±29,69	0,002 [e]
STAI-S	11,09±5,20	16,76±7,96	10,9±4,33	9,86±4,26	9,48±4,12	0,007 [e,f,g]
COC+PMD						
Cortisol	8,61±2,25	10,61±3,15	8,77±2,29	11,92±4,23	8,54±2,10	0,020 [e,j]
α-amilase	52,27±20,17	57,33±26,97	56,27±26,12	58,53±26,80	58,27±25,18	0,024 [h]
STAI-S	16,81±7,90	19,46±10,84	14,4±8,38	13,33±8,94	12,67±8,88	0,175
COC+IMD						
Cortisol	9,09±5,00	11,4±6,95	11,1±5,15	15,18±2,17	12,64±1,54	0,021
α-amilase	55,44±17,93	59,11±17,00	59,33±17,54	61,33±18,71	60,67±19,27	0,003
STAI-S	14,22±5,92	18,55±6,54	12,89±6,60	11±6,73	10,67±5,92	0,11
ANOVA factor x grupo	(p/*)	(p/*)	(p/*)	(p/*)	(p/*)	
Cortisol	0,898	0,436	0,251	0,032/[k]	0,004/[j, l]	
α-amilase	0,887	0,535	0,672	0,665	0,592	
STAI-S	0,030/[j]	0,65	0,273	0,308	0,347	

COC-PMD: Cocaine dependence+Primary Major Depression pacientes, COC-IMD: Cocaine dependence+Induced Major Depression *P.Bonferroni: ANOVA condition x time, a= statistical differences between TpreTTS y TpostTTS; b= statistical differences between TpreTTS y Tpost30TTS; c= statistical differences between TpreTTS y Tpost60TTS; d= statistical differences between TpreTTS y Tpost90TTS, e= statistical differences between TpostTTS y Tpost30TTS; f= statistical differences between TpostTTS y Tpost60TTS; g= statistical differences between TpostTTS y Tpost90TTS; h= statistical differences between Tpos30tTTS y Tpost60TTS; i= statistical differences between Tpos30tTTS y Tpost90TTS; j= statistical differences between Tpos60tTTS y Tpost90TTS; ANOVA condition x group: m= statistical differences between controls and COC+DMP; n= statistical differences between controls and COC+DI; ñ= statistical differences between controls and COC+DMP and COC+DI.

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