

Degree of Depression, Anxiety, Stress and Expression of 11βHSD-1 in Preterm Labor

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OBJECTIVE:

To investigate the role of psychosocial status, in the form of degrees of depression, anxiety, and stress in pregnant women as evidenced by expression of the enzyme 11β Hydroxysteroid Dehydrogenase-1 (11βHSD-1) in fetal membranes, in relation to premature activation of maternal-fetal Hypothalamic-Pituitary-Adrenal (HPA) axis as a risk factor of preterm labor.

DESIGN:

Case-control study, comparing preterm and term groups (n=54) who underwent labor in Obstetrics Emergency Room, Sanglah Central General Hospital Denpasar, Bali.

METHOD:

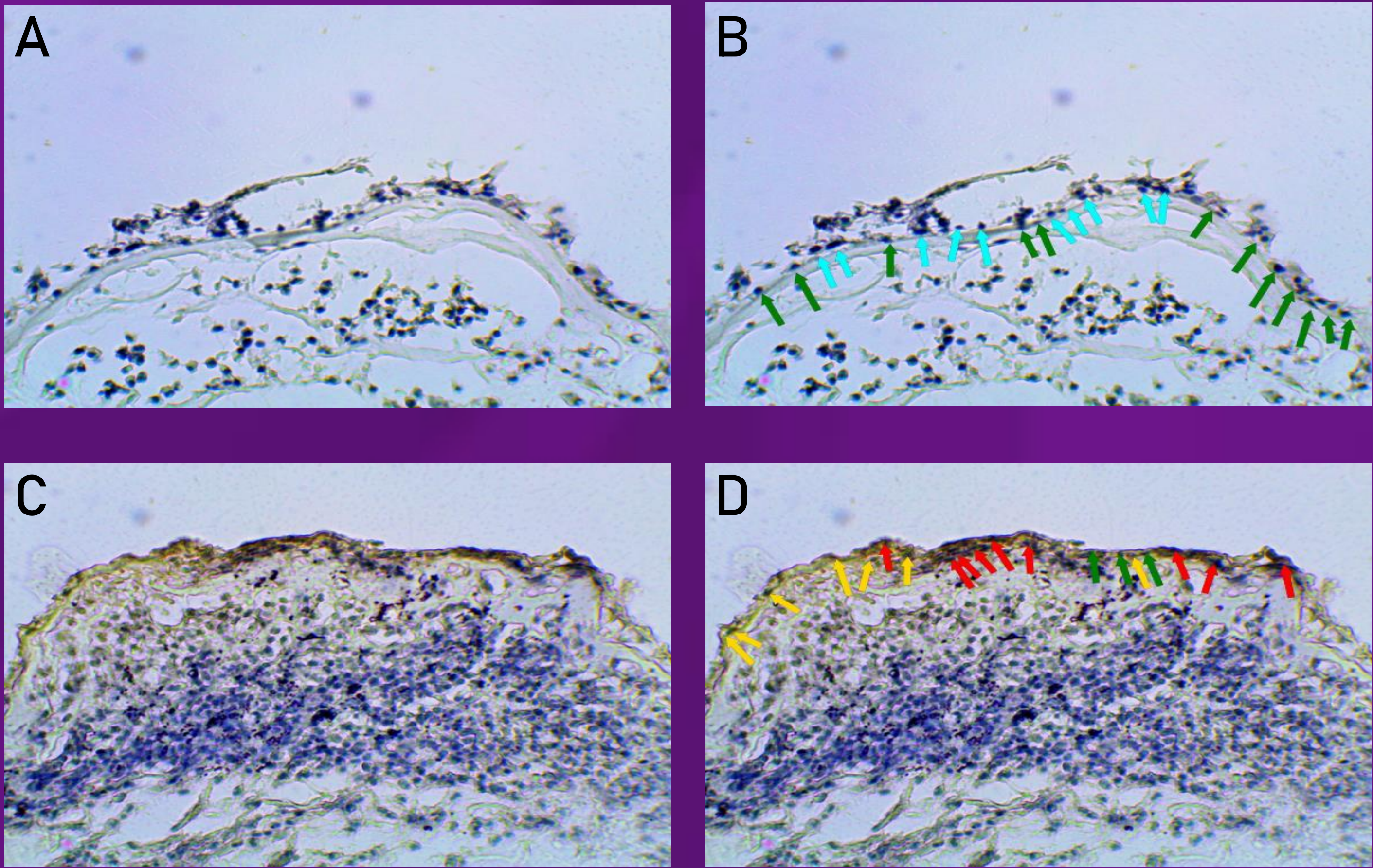
Degree of depression, anxiety, and stress was assessed using the Depression, Anxiety, and Stress Scale (DASS 42) questionnaire. Fetal membrane expression of 11βHSD-1 was examined semi-quantitatively using immunohistochemistry method. Data collected was subjected to further statistical tests. Normality test with Shapiro Wilk test, followed by parametric independent T-test and Mann Whitney test was performed. Cut off of 11βHSD-1 expression was determined using Receiver Operating Characteristic (ROC) curve. Bivariate analysis between labor status and degrees of depression, anxiety, and stress, as well as the expression of 11βHSD-1 by simple logistic regression test and multivariate analysis of all variables with multiple logistic regression test was used to estimate odds ratio (OR) and 95% confidence interval (95% CI).

RESULTS:

Depression (OR = 5.045; 95% CI = 1.302 – 19,559; p = 0.019) and stress (OR = 14,943; 95% CI = 1,860 – 120,064, p = 0,011) is a risk factor for preterm delivery. Whereas for the anxiety variable, there was no significant difference between the case and control groups (p = 0.125) with OR = 1.647; 95% CI = 0.870 – 3.117. Chi square test between the 11βHSD-1 expression variable and preterm delivery showed a statistically significant difference between the case and control groups, with p = 0.013 (OR = 4.156; 95% CI = 1.312 – 13.169). Furthermore, in multivariate analysis showed that stress was statistically significant (p = 0.034) with OR = 11.354; 95% CI = 1,209 – 106.651 as a risk factor for preterm delivery.

CONCLUSION:

The abnormal degree of depression and stress based on the DASS 42 criteria and high expression of 11βHSD-1 in amnion are the risk factor for preterm delivery.



Expression of 11βHSD-1. Amniotic cells at a total magnification of 400 times with a blue nucleus and brown cytoplasm. Variations in brown color intensity of 11βHSD-1 expression, weak intensity (green arrow), moderate intensity (yellow arrow), strong intensity (red arrow), and not expressing (blue arrow). A: Term group, B: Term group with arrows, C: Preterm group, D: Preterm group with arrows

Bivariate Analysis

	Preterm Group n (%)	Term Group n (%)	OR	95 % CI	p
Depression					
Normal	16 (53,9)	24 (88,9)	5,045	1,302 – 19,559	0,019
Mild	9 (33,3)	9 (11,1)			
Moderate	2 (7,4)	0			
Anxiety					
Normal	12 (44,4)	15 (55,6)	1,647	0,870 – 3,117	0,125
Mild	5 (18,5)	8 (29,6)			
Moderate	9 (33,3)	4 (14,8)			
Severe	1 (3,7)	0			
Stress					
Normal	15 (55,6)	26 (96,3)	14,943	1,806 – 120,064	0,011
Mild	8 (29,6)	1 (3,7)			
Moderate	5 (14,8)	0			
11β-HSD-1					
High	16 (53,9)	24 (88,9)	4,156	1,312 – 13,169	0,013
Low	9 (33,3)	9 (11,1)			

Multivariate Analysis

	Preterm Group n (%)	Term Group n (%)	OR	95 % CI	p
Depression					
Normal	16 (53,9)	24 (88,9)	3,064	0,584 -16,066	0,185
Mild	9 (33,3)	9 (11,1)			
Moderate	2 (7,4)	0			
Anxiety					
Normal	12 (44,4)	15 (55,6)	0,727	0,275 -1,922	0,521
Mild	5 (18,5)	8 (29,6)			
Moderate	9 (33,3)	4 (14,8)			
Severe	1 (3,7)	0			
Stress					
Normal	15 (55,6)	26 (96,3)	11,354	1,209 -106,651	0,034
Mild	8 (29,6)	1 (3,7)			
Moderate	5 (14,8)	0			
11β-HSD-1					
High	16 (53,9)	24 (88,9)	3,419	0,892 - 13,104	0,073
Low	9 (33,3)	9 (11,1)			