ROLE OF ADRENALS IN **BIPOLAR DISORDER (BD)** and its DOWN REGULATION BY THYROXIN

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Objective

To study-

- Correlation between timings of BD Symptoms & timings of Adrenal Secretions (Diurnal Variations)
- Basal Adrenal secretions in these patients.
- Pineal gland over activity by measuring melatonin excretion and its correlation with the above
- Measuring the TSH and down regulation of Adrenals by THYROXIN to see the impact on symptoms of BD.

Background

Timings of symptoms of BD were coinciding with ↑ Adrenal Secretions and Pineal gland Over Activity. Symptoms were affected by diurnal variation, Light & Dark cycle and weather (↑ in Rainy season and winters).

Materials & Methods

About 42 patients from Psychiatry Department of Govt. Hospitals ESIC, IHBAS & RML in Delhi, India, over a period of 20 years had Measurement of: Testosterone, Androgen, ACTH, GH, Prolactin, Free T3,T4 and TSH, Urinary excretion of Melatonin, Aldosterone, Cortisol, Oxytocin & Vasopressin.

Results

The above hormones were found to be statistically significant high in the BD patients at the time of attack, and their basal levels were also high (**ADRENAL HIGH**) in between the attacks when compared with the control group.

The following table from the book “Biological Psychiatry” p.198 also shows similar findings:

- Hypersecretion of cortisol
- Loss of normal circadian cortisol cycle
- Increase urinary excretion of cortisol and metabolites
- Abnormal response to dexamethasone
- Blunting of growth hormone output to alpha-adrenergic stimulants
- Blunting of TSH responses to TRH
- Blunting prolactin responses to several agents
- Blunting ACTH responses to CRF

Discussion & Conclusions

Definite Co-relation of coinciding of symptoms of BD with Adrenal & Pineal gland over activity was found, controlled by circadian rhythm and light & dark cycles respectively, affecting the loss of nocturnal peaks of TSH, LH, Oxytocin, Vasopressin, Prolactin and opiate production in Bipolar Disorder.

Nemeroff et. al., 1992; Szigethy et. al., 1994 have suggested with many several studies suggested that increased cortisol response to ACTH may be related to adrenal hypertrophy, or increase in size of adrenal gland in affected disorder. Excessive cortisol itself leads to impaired TSH release.

The treatment with Thyroxin and Temp. Maintenance (Low temp.) along with very low doses of anti psychiatry drugs gave them instant relief and proper sleep hours.

THYROXIN INDUCES SLEEP **INSTANTANEOUSLY** as increased TSH hampers sleep by itself, by ↑ Prolactin and also it ANTAGONIZES SEDATIVE action of Anti psychotic drugs. (Speroff 2012)

ONCE SLEEP PATTERN IS RESTORED:

- The circadian rhythm of ACTH is restored.
- Pineal gland over activity (producing sex hormones, estradiol, testosterone, dehydrotestosterone, progesterone, prolactin and catecholamines (nor epinephrine) showing high sympathetic activity) affected by light & dark cycles is also improved (Adrenal Secretions could be 20 folds within few seconds). ACTH is found throughout the brain (Biological Psychiatry).

- Peaks of Oxytocin and vasopressin are also reduced which play crucial role in symptoms like **FEAR, PAIN, TEMP, MEMORY AND BEHAVIOUR.**

THYROXIN PERFORMS VERY IMPORTANT FUNCTION FOR EACH AND EVERY CELL OF HUMAN BODY BY

- Nuclear Transcription** of many Genes (POMC peptides formation, ↑ ENDORPHINS AND OPIATES affecting high ANALGESIC potency and BEHAVIORAL effects)
- Gene translation** ↓ or ↑ the receptor productivity of almost all cells of the body.
- Non Genomic cellular action** affecting DOPAMINE, SOMATOSTATIN, PROLACTIN, OXYTOCIN AND VASOPRESSIN production (Cortisol modifying osmotic threshold for release of vasopressin)
- Opiates so affected by thyroxin inhibit the oxytocin release, both oxytocin and vasopressin are responsible for FEAR, PERCEPTION, MOOD, MEMMORY and BEHAVIOR. OXYTOCIN and VASOPRESSIN are regulated by THYROXIN, SEX STEROIDS, ACTH and GONADOTROPIN secretion.

Hence Thyroxin Down regulates not only the secretions from adrenals but modulates the other hormones inducing sleep and improving the symptoms of BD.

Increased TSH IS NOT ONLY FOUND IN BD PATIENTS BUT ALSO FOUND IN THEIR FAMILY MEMBERS AND FIRST DEGREE RELATIVES and were treated by thyroxin for ailments on similar basis namely INSOMNIA, HYPERTENSION (IDIOPATHIC), MIGRAINE (INCREASED OXYTOCIN AND VASSOPRESIN) POSTPARTUM PSYCHOSIS, BULLEMLIA NERVOSA, COMPULSIVE OBSESSIVE NEUROSIS, BRONCHIAL ASTHAMA and Leucoderma etc. with thyroxin and other supportive treatment.

Thyroid Hormone Activation of Target Cells