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Baseline Serum Prolactinin Drug Naïve First Episode Schizophrenia Predicts a Positive Clinical and Social Outcome at Five Years, Post Discharge Follow-up

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NR1-087, Baseline Serum Prolactin in Drug Naïve *First Episode Schizophrenia* predicts a positive clinical and social outcome at five years, post discharge follow-up.

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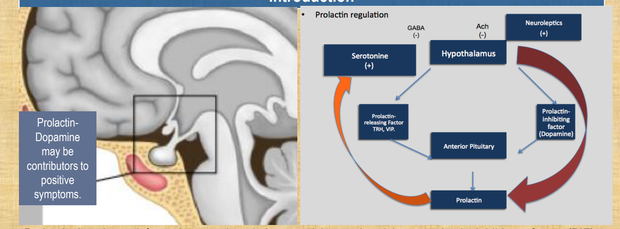
Abstract

Serum prolactin is an indicator of tuberoinfundibular dopamine activity. It is reported to increase in wide variety of mental illnesses. It has close relationship with antipsychotic therapy. However, its relationship with psychopathology and outcome is not clear. Serum prolactin level was measured in 30 male and 30 female drug naive patients of schizophrenia. Subsequently, these patients were treated with antipsychotics. The severity of psychopathology at the baseline and subsequent improvement at the end of 3 weeks and 6 weeks was assessed on modified brief psychiatric rating scale (mBPRS). Available to follow up at five years 18 males & 22 females patients were reassessed and findings analyzed for predictive significance.

Contrary to expectations, prolactin levels in patients were twice as high before treatment compared to after. However, this difference was found to be statistically significant in males only. Correlations between the prolactin, BPRS, and outcome measurements were not significant for any time point up to six weeks. Significant positive correlations were observed using measures obtained five years follow up only. From the present study it seems that baseline serum prolactin level in drug naive patients of schizophrenia may not be a reliable indicator of psychopathology but it may be an indicator of good prognosis in long term. Further research is necessary to arrive at a definite conclusion.

Key words: Serum prolactin levels, schizophrenia, outcome

Introduction



Prolactin is released from the anterior pituitary and is regulated by a prolactin inhibitory factor (PIF) commonly known as dopamine. he dopamine hypothesis of increased dopaminergic activity in the mesolimbic dopaminergic projections is the most widely accepted theory behind schizophrenic symptomology and is often treated with antipsychotics. (Kaplan et al.1994).

Interestingly, elevated serum prolactin levels frequently occur in patients treated with antipsychotics, which block dopamine receptors (Hamner & Arana, 1998). Some studies have shown an association between early relapse following neuroleptic withdrawal and low serum prolactin levels (Brown & Laughren, 1981; Liberman et al, 1990). It has also been shown that increased baseline prolactin levels are inversely related to severity of psychopathology at baseline in drug naïve schizophrenia (Shrivastava 2000). It is possible that as dopamine activity decreases after prolonged treatment, levels of serum prolactin diminishes.

We suggest that if an association can be established between baseline serum prolactin levels and psychopathology or level of functioning in the long-term, in drug naive patients of schizophrenia, serum prolactin levels can conceivably be used as a predictor of outcome

It is likely that serum prolactin levels may also reflect the mesolimbic dopaminergic activity. On the basis of this hypothesis, it may be suggested that in drug naive patients of schizophrenia, an increase in dopaminergic activity and psychopathology is associated with a decrease in serum prolactin concentrations.

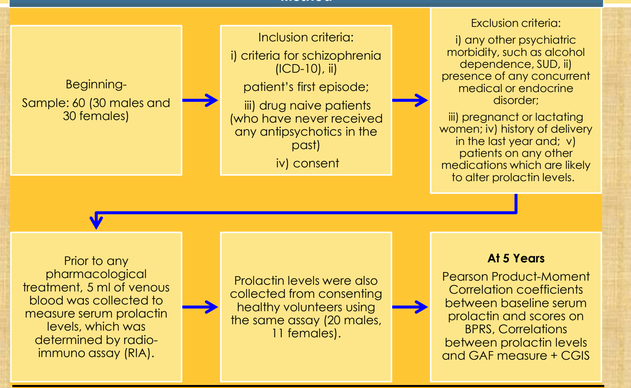
•In order to test this hypothesis, the present study was undertaken with the following objectives:

•i) To measure serum prolactin levels at baseline in drug naive patients of schizophrenia;

• ii) To conduct correlations between baseline serum prolactin levels and severity of psychopathology and outcome in the short-term (baseline, three, and six weeks) and

•iii) to conduct correlations between baseline serum prolactin levels and measures of psychopathology and the level of functioning in a long-term follow-up at five years.

Method



Parameters	Base	3 weeks	6 weeks	5 years
Screening	x			
Diagnosis- ICD-10,	x			x
Inclusion Criteria, exclusion criteria, Consent	x			
Serum Prolactin	x			
mBPRS	x	x	x	x
CGIS	x	x	x	x
GAF	x	x	x	x
N, male	30			22
N, female	30			18

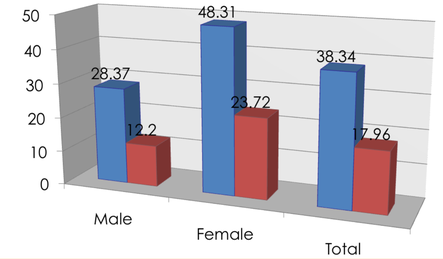
Results

CORRELATION COEFFICIENT BETWEEN SERUM PROLACTIN LEVELS AND GLOBAL ASSESSMENT OF FUNCTIONING

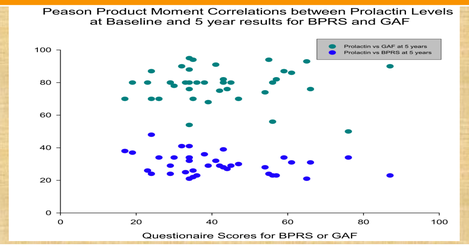
	Value of r (n=18)	t	d.f	Probability (p)
At base				
Total sample (N=38)	0.476	3.25	36	<0.001
Males (N= 18)	0.156	0.63	16	NS
Females (N=20)	0.067	0.29	18	NS
At 5 years				
Total sample (N=38)	0.629	4.85	36	< 0.0001
Males (N= 18)	0.775	4.91	16	<0.0001
Females (N=20)	0.892	8.37	18	<0.0001

Results

Serum prolactin at base in Drug naïve patients



Scatter : Relationship Serum Prolactin & Psychopathology (PRL &BPRS)



CORRELATION COEFFICIENT BETWEEN SERUM PROLACTIN AND BPRS FOR MALES

	Value of (n=18) r	t	d.f.	Probability (p)
At base	0.091	0.081	17	NS
At 3 weeks	0.223	0.94	17	NS
At 6 weeks	0.098	0.098	17	NS
At five years	0.764	5.02	18	0.0001

CORRELATION COEFFICIENT BETWEEN SERUM PROLACTIN AND BPRS FOR FEMALES

	Value of r (n=20)	t	d.f	Probability (p)
At base	0.071	0.17	6	NS
At 3 weeks	0.46	1.26	6	NS
At 6 weeks	0.5	1.41	6	NS
At five years	0.5	2.31	18	<0.01

Discussion

In our study, we also conducted correlational analyses between prolactin levels with BPRS and GAF measures separately.

There were no significant correlations between serum prolactin levels and scores on BPRS at baseline, three, and six weeks, nor was there a significant correlation between GAF and prolactin at baseline.

However, there were significant correlations between prolactin and BPRS or GAF at five years follow-up.

We do not have an explanation for this result other than there is the possibility that psychopathy and outcome measures are associated with the ability of patients to handle stress.

It is possible that high levels of stress and hence increased prolactin at baseline predicts a positive outcome for this patient population.

However, this result and the fact that we have a small sample size requires that this data be interpreted conservatively.

In this study, we wished to provide predictive biological measures for the drug naïve first episode schizophrenic population.

Lacking in the literature and in this study are prolactin measures at all time points for BPRS and GAF measures. During the time when this study was proposed we did not have the resources to measure at all time points but we are now considering adding this component in a future study.

In spite of this limitation, this study to our knowledge is the first that provides data relating prolactin levels to psychopathology and functioning at five years follow-up.

This association is not completely without precedent. There are reports that prolactin levels correlate with outcome measures, but it was not indicated to be a robust phenomenon (Kolakowska T et al, 1985; Meltzer HY, et al, 1985).

In conclusion, as observed in this study, serum prolactin levels cannot be reliably used in the short-term as an objective indicator of psychopathology in in-patient but tentatively can be considered for predicting long-term outcomes. Future investigations and replications in this area may provide valuable insight into predictive factors of outcome in schizophrenia

Conclusions

From the present study it seems that baseline serum prolactin level in drug naive patients of schizophrenia may not be a reliable indicator of psychopathology but it may be an indicator of good prognosis in long term.

Further research is necessary to arrive at a definite conclusion.

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