Posterior pituitary neurohormonal disturbances in schizophrenia and role of oxytocin in treatment – need for more short- and long-term studies

Dear editor

We read with great interest the recently published article “Atrial natriuretic peptide and posterior pituitary neurohormone changes in patients with acute schizophrenia” by Guzel et al.1 The study results are vital in understanding the variations among the levels of posterior pituitary neurohormones in patients with acute schizophrenia and seem to be of great value for future therapeutic modifications of the disease.

This cross-sectional study revealed the posterior pituitary neurohormone changes in acute schizophrenia patients. The researchers used two groups. One comprised schizophrenia patients with an acute episode, and another comprised healthy individuals. The authors used Positive and Negative Syndrome Scale (PANSS), Clinical Global Impression (CGI) scale and General Assessment of Functioning (GAF) scale for the assessment of the symptoms and did serum analysis to find the correlation among the levels of oxytocin (OXT), arginine-vasopressin (AVP) and atrial natriuretic peptide (ANP). The study showed a negative correlation between OXT levels and PANSS and CGI scores while a positive correlation was found between OXT levels and GAF score. The study depicted that the patients with acute schizophrenia have significantly low levels of OXT and significantly high levels of AVP. ANP levels were also found to be low, but a significant clinical correlation was not found. The authors thus concluded that OXT, in particular, is associated with decreased severity of schizophrenia and may improve functionality of these patients.

Many studies have been conducted in the past regarding the use of OXT in the treatment of social deficits in schizophrenia patients.2,3 Earlier, a small trial conducted in 2014 showed improvements in social deficits following 6-week intranasal (IN) OXT therapy.2 Later, another study in 2015 demonstrated the positive effect of single dose of OXT in a small group of patients.3 However, recent developments in this regard are revealing poor results. A latest long-term trial of 12-week twice-daily IN OXT therapy failed to show any positive impact.4 Another metanalysis of eight randomized controlled trials conducted last year also showed no improvements of the social functioning.5

We suggest that further larger scale studies are needed to establish a proper role for OXT in the treatment of these symptoms. It is worth mentioning that as short-term trials have shown us positive results in the past, it is necessary to conduct trials comparing treatments of different durations so that we can get a clear picture about the use of OXT in future therapy of the disease.

Correspondence: Owais Gul
Department of Medicine, Dow Medical College, Dow University of Health Sciences, Flat no. A-303, Lateef square, Block-16, Federal b area, Karachi 75950, Pakistan
Tel +92 346 391 8294
Email owaisgul96@yahoo.com

Owais Gul 1
Saqib Gul 2
Abdul Aziz Godil 3

1Department of Medicine, Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan; 2Department of Medicine, Hamdard University, Karachi, Pakistan; 3Department of Medicine, Jinnah Medical and Dental College, Karachi, Pakistan

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Authors’ reply
Esra Yazici1
Derya Guzel2
Ahmet Bulent Yazici1

1Department of Psychiatry, School of Medicine, Sakarya University, Sakarya, Turkey; 2Department of Physiology, School of Medicine, Sakarya University, Sakarya, Turkey

Correspondence: Ahmet Bulent Yazici
Department of Psychiatry, School of Medicine, Sakarya University, Korucuk Street, Sakarya 54290, Turkey
Tel +90 532 599 4988
Fax +90 264 255 2105
Email a.bulentyaz@gmail.com

Dear editor
We would like to thank Gul et al for their kind and valuable comments on our work. Briefly, our study was about the changes in levels of oxytocin (OXT), arginine-vasopressin (AVP), and atrial natriuretic peptide (ANP) in patients with acute schizophrenia and reported the following findings:

1) Concentrations of OXT were lower in patients with acute schizophrenia than in healthy controls, and there was a negative correlation between OXT levels and positive symptoms, measured on the Positive and Negative Symptom Scale, and severity, measured on the Clinical Global Impression (CGI) scale.

2) There was a positive correlation between OXT levels and functionality according to the General Assessment of Functionality scale.

3) Concentrations of AVP were significantly higher in patients with schizophrenia, and there was a negative correlation between AVP levels and CGI scores.

4) Concentrations of ANP were lower in schizophrenia patients with acute attacks but not at a significant level, and ANP levels were not correlated with clinical features.1

The molecular basis of neuropsychiatry and its impact on clinical treatments have been recent topics of interest. The etiology of schizophrenia is still not understood completely. Treatment topics, such as negative symptoms, cognitive decline, and social impairment, await further exploration with respect to etiology. The need for a better understanding of the hormonal basis of psychiatric disorders has prompted us and other researchers to investigate hormones and their roles in schizophrenia.2 Our study and others show that neurohormones, especially OXT, may have important roles in the etiology and treatment of schizophrenia.3–6 Previous studies found relationships between AVP changes and some symptoms of schizophrenia, but we did not obtain similar findings.7–9 Studies on AVP levels in schizophrenia patients are limited, and our findings showed that ANP levels were not significantly lower in schizophrenia patients compared to controls.10 Gul et al are right to note that our study had a small sample size. Larger sample sizes and perhaps multicenter studies are needed. In another study of schizophrenia patients by part of our study team (with results that are being prepared for publication), OXT was associated with social cognition and ANP was associated with memory functions in schizophrenia patients.10 Schizophrenia researchers are generally focused on OXT roles as OXT deserves researchers’ interest and attention. However, we think that other neurohormones, such as AVP and ANP, may also have important roles in schizophrenia and perhaps other psychiatric disorders.

We appreciate and thank Gul et al and the Editor in Chief of Neuropsychiatric Disease and Treatment for giving us the opportunity to discuss our study and receive comments.

Disclosure
The authors report no conflicts of interest in this communication.

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