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Editorial Commentary

Psychological effects of precocious puberty

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Algedik *et al.*,[1] have studied the psychological effects of precocious puberty in a cohort of Turkish girls presenting with central precocious puberty and premature thelarche, highlighting the need to consider a child's psychosocial well-being in the evaluation process leading up to puberty-suppressing treatment with gonadotropin-releasing hormone analogs (GnRHa). While several studies have described benefits of the use of GnRHa in the context of central precocious puberty, the authors rightly note the relative paucity of evidence regarding psychological status, an important but ill-defined component of the treatment decision pathway. Their study of psychological changes in young girls and their mothers makes a valuable contribution to the understanding of psychosocial distress in the context of precocious puberty, a condition that is not uncommon, affecting as many as 1 in 5000 children in many populations.[2]

Puberty is a critical developmental stage involving significant hormonal, physical, and emotional changes in children. A phase shift in early hormonal activation hastens not only physical pubertal characteristics but also results in major psychological upheaval with profound effects on emotional regulation, self-esteem, peer relationships, and overall mental health.[3] Understanding the psychological effects of precocious puberty is important for clinicians to provide appropriate interventions and support for affected children.

A few studies preceding Algedik *et al.*,[1] have investigated psychological profiles and have reported negative perceptions in body image and lower self-esteem, for instance in Korean girls with precocious puberty.[4] Similarly, in Chinese children with precocious puberty, higher levels of depression and lower happiness and satisfaction levels have been reported.[5] Their observations correlated with findings of higher levels of anxiety in Spanish girls,[6] although, interestingly, they were not replicated in a US study,[7] suggesting regional variation and observational bias from social and cultural perspectives. As psychological status is nuanced by geographic location and cultural sensitivity, it is important to map psychosocial evaluation in the context of pubertal change to different populations; thus, Algedik *et al.*,[1] study in a Turkish cohort is relevant and contributes to an expanding evidence base.

GnRHa therapy is currently the most effective treatment for central precocious puberty. As well as the aim to limit final adult height reduction by inducing a delay in epiphyseal closure, another frequently cited reason to start GnRHa treatment is to alleviate psychological distress associated with early pubertal development, with studies reporting variable success in follow-up review.[8,9] Algedik *et al.*,[1] have added to the growing body of knowledge of psychological status, by examining the baseline psychological impact of precocious puberty in girls and their mothers before the provision of GnRHa treatment. Their study included a cohort of 21 girls referred with early breast development to the pediatric endocrine outpatient clinic of Ümraniye Training and Research Hospital in Istanbul. Girls with precocious puberty, especially those diagnosed with central precocious puberty, exhibited higher levels of psychological distress compared to control groups. Specifically, these girls had increased anxiety, social problems, and slow cognitive tempo.

Mothers of girls with precocious puberty reported significantly higher levels of anxiety, depression, and stress compared to those of the control group.

The study provides insights into the relationship between early pubertal onset and cognitive and emotional disturbances in both the affected children and their mothers. It also underscores the importance of addressing both psychological and biological aspects when evaluating and managing precocious puberty and alerts clinicians to explore the emotional impact on families that may influence treatment decisions about GnRHa therapy. The findings suggest that higher maternal anxiety and lower education levels correlate with greater psychological distress in both the mother and child, pointing to the need for targeted support for families with lower educational attainment and socio-economic status.

It should be noted that challenges in obtaining complete psychological evaluations for both the children and their mothers limited the number of participants included in the analysis. The study outcomes were restricted by the design to include a small group of controls with no clear rationale for sample size and magnitude of expected variation. Furthermore, although the children completed the "Depression Scale for Children" themselves, their mothers completed the "Behavior Assessment Scale for Children and Adolescents Aged 6–18" on their behalf. In the process, they may have projected their perceptions to influence the assessment of childhood behavior. Nonetheless, the study raises awareness of the similarity and resonance of mother-daughter psychological distress that is likely to impact the clinical decision to commence GnRHa therapy in precocious puberty.

Data from the study provide a glimpse into the state of mind at the beginning of the journey of precocious puberty; however, the study does not follow through with longitudinal analysis. For a more long-term perspective, readers may be guided to large prospective data from the National Longitudinal Study of Adolescent to Adult Health in the United States.[10] Here, findings revealed a significant association between earlier age at menarche and elevated rates of depressive symptoms persisting into early to middle adulthood. While studies suggest that treatment with GnRHa may ameliorate differences in cognitive function and behavior,[11] Algedik *et al*.,[1] early exploration suggests the need for deeper longitudinal re-analysis for persistence of psychological distress in larger groups of children and young adults.

Caveats aside, Algedik *et al*.,[1] findings should prompt open conversation with children and their families about their views and emotions in the context of precocious puberty and the need for formal psychological counseling and review, over and above medical therapy with GnRHa. It is only through recognition of both psychological and physical aspects of the problem that clinicians can truly provide comprehensive care for children with precocious puberty.

Conflicts of interest

Dr. Indraneel Banerjee is on the Editorial Board of the Journal.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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