Vitamin D deficiency: infertility and neurodevelopmental diseases (attention deficit hyperactivity disorder, autism and schizophrenia).

Berridge MJ.


Abstract

The process of development depends on a progressive sequence of events that are carefully orchestrated by a number of signaling systems. Alteration in these signaling events results in infertility and neurodevelopmental diseases such as attention deficit hyperactivity disorder (ADHD), autism spectrum disorders (ASD) and schizophrenia. A prominent role throughout development beginning at fertilization and continuing through early development, implantation and organ differentiation such as heart and brain development is regulated by Ca2+ signaling. There is increasing evidence that Vitamin D plays a major role in regulating these developmental processes. When Vitamin D is deficient, there is an increase in infertility and an onset of neurodevelopmental diseases. The aim of this review is to describe why Vitamin D deficiency has such a serious effect on development. The main conclusion is that one of the primary functions of Vitamin D is to maintain the phenotypic stability of both the Ca2+ and redox signaling pathways that play such a key role throughout development.