

Neuroscience and New Research Perspectives on Violence as a Risk Factor in Pregnancy

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ABSTRACT

Domestic violence against women during pregnancy can also have a significant impact on the brain development of the unborn child and a neuro-psycho-postural alteration. Hiscox et al. These changes could also partly explain the development of neurodevelopmental disorders and other psychiatric pathologies by recalling delinquent behaviors (such as pathological addictions) and criminological, degenerating the functioning of the “**Locus Coeruleus, a brain nucleus involved, when dysfunctional in neurodegenerative diseases, in the control of the limbic system**”.

It is therefore important to act through a multidisciplinary scientific and social and integrated approach such as TRANSCRANIC MAGNETIC STIMULATION that can include different perspectives of analysis, to work on the neurophysiological-psychological causes of the individual.

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Discussion

Adolescents nowadays increasingly tend to feel alone and misunderstood, falling into pathological addictions and developing emotional disorders or real psychiatric pathologies, sometimes leading to suicide. The review by Esposito-Smythers and Goldston, highlights that the presence of a substance use disorder is associated with a 3-4 fold increase in suicide attempts [1]. Furthermore, adolescents diagnosed with a substance use disorder are 5 to 13 times more likely to die by suicide than adolescents without this diagnosis [2]. According to the Youth Report conducted by Eures Economic and Social Research, in collaboration with the National Youth Council and the Italian Youth Agency, in Italy suicide is the fourth leading cause of death among young people aged between 15 and 29. In 2021, 13.9% of suicides involved the 15-34 age group, showing a significant increase compared to the period prior to the pandemic. In order to make a significant contribution to what could be defined as a real social plague, it is vital to look back to the root of the problem. In many cases, in fact, the origins of this discomfort date back to the period spent in the mother's womb and to the violence suffered by the mother. Domestic violence that occurs during pregnancy is associated with an increased risk of perinatal death and neonatal death [3]. Women who have been hospitalized for physical aggression during pregnancy run an eightfold higher risk of fetal death and almost sixfold higher risk of neonatal death [4]. Furthermore, domestic violence and continuous exposure to trauma are associated with an increase in interurrences in the pregnancy-puerperal cycle, namely: fetal growth restriction, anemia, smoking, prematurity, stillbirth, premature rupture of membranes and placental abruption [5].

More detailed studies have shown that domestic violence can affect children even before they are born. The Michigan State University study is among the first to highlight correlation between the abuse of pregnant women and symptoms of emotional and behavioral trauma in their children within the first year of life. Symptoms include nightmares, being easily startled, being disturbed by loud noises and bright lights, avoiding physical contact and having difficulty experiencing pleasure. The study of 182 mothers between the ages of 18 and 34 found a surprisingly strong relationship between prenatal male-partner-inflicted abuse suffered by the mother and symptoms of postnatal trauma in the child. Prenatal abuse may, therefore, be the cause of changes in the mother's stress response systems, increasing levels of the cortisol hormone, possibly increasing cortisol levels in the fetus. Cortisol, being a neurotoxic substance, has harmful effects on the brain when it reaches excessive levels. This mechanism could be at the basis of the emotional problems that are found after birth in children whose mothers have had a traumatic and violent experience and it could also represent the beginning of psychological and emotional problems experienced by the same children once they become adolescents. Furthermore, this situation could create a form of insecure or altered mother/child attachment to the point of causing changes in the neurophysiological functioning of the child (Michigan State University, 2014). Domestic violence against women during pregnancy can also have a significant impact on the brain development of the unborn child and a neuro-psycho-postural alteration. Analysis the brain scans of 143 South African newborns whose mothers had been victims of intimate partner violence (IPV) during pregnancy. Intimate partner violence includes emotional, physical and/or sexual abuse or aggression.

The brain MRI scans were performed when the infants were only 3 weeks old on average, so it is likely that all of the changes observed developed in the womb.

The study highlights how maternal exposure to IPV during pregnancy is associated with changes in brain structure in infants identified shortly after birth. It is crucial to note that the effects of IPV exposure may vary based on the sex of the child. For girls, maternal exposure to IPV during pregnancy was associated with a smaller amygdala, an area of the brain involved in emotional and social development. For boys, IPV exposure was associated with a larger caudate nucleus, an area of the brain involved in multiple functions, including movement execution, learning, memory, reward, and motivation.

Early changes in brain structures may explain why children whose mothers experience high levels of stress due to trauma and domestic violence during pregnancy are more likely to develop psychological problems in childhood or later in life. These changes may also partly explain the development of neurodevelopmental disorders and other psychiatric pathologies. In the future, there may be a possibility of identifying a correlation in adult psychiatric patients with problems developed in the neurophysiological-postural and psychological-emotional fields, recalling delinquent behaviors (such as pathological addictions) and criminological behaviors, degenerating the functioning of the “Locus Coeruleus”, a brain nucleus involved, when dysfunctional in neurodegenerative diseases, in the control of the limbic system (memory, attention, concentration, control of anxiety and depression). This nucleus can be directly or indirectly responsible for the production of the major neurotransmitters. Acetylcholine and Norepinephrine are produced locally, Serotonin and Melatonin are produced by the pineal gland following cerulean stimulation, Dopamine originates from the Substantia Nigra always following cerulean stimulation. This is why working on the causes becomes as fundamental as it is necessary for the future of new generations.

Gender differences in brain development could also help explain why girls and boys often develop multiple mental health problems. Starting from this evidence, we should act first on mothers, focusing rehabilitation interventions on the ability to recognize, respond to and report domestic violence.

Preventing or acting quickly to help women escape domestic violence can be an effective way to support healthy brain development in children. The causes of interpersonal violence

are complex and often the result of individual, family, community and social factors. It is therefore important to act through a multidisciplinary and integrated approach that can include different professional perspectives. Psychiatry, Psychotherapy, Psychological approach, Myofunctional therapy, Socioterapy, Clinical and Forensic Pedagogy, Traditional and Integrated Medicine, Neuroscience and Transcranial Magnetic Stimulation (This technique involves the projection of a fluctuating magnetic field - magnetic pulses - through the skull into the brain. This magnetic field generates electrical currents within the brain tissue, via electromagnetic induction, modulating neuronal activation. Consecutively delivered TMS pulses are referred to as repetitive or rTMS. The characteristics of transcranial magnetic stimulation make this technique a fundamental method and a tool for analyzing higher cognitive functions and the central motor pathway). These are all useful and effective approaches. It is important to remember that collaborations between disciplines are essential to be able to make progress from all points of view: emotional, cognitive, neuronal, social and psychological [6-8].

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