

Dramatic Nightmare: Mental Retardation Etiology

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Outline

Thesis: There are many genetic, behavioral, and psychosocial causes as to why mental retardation is increasing over the world.

I. The genetic causes of mental retardation

A. Imprinted genes deregulation

B. Monogenic causes

1. X- linked mental retardation
2. Autosomal dominant mental retardation
3. Autosomal recessive mental retardation

C. Chromosomal abnormalities

1. Trisomy 13
2. Trisomy 18
3. Trisomy 21

II- The behavioral causes of mental retardation

A. Substances

1. Alcohol
2. Cocaine
3. Nicotine

B. Harmful chemicals

1. Heavy metal
2. Radiation

C. Severe stress

III. The psychosocial causes of mental retardation

A. Poverty

1. Malnutrition

B. Family

1. Size

2. Relationship

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In the 20th century, a small elite group of scientists who decided to study the aspects of mental retardation were found in a confusing situation making their research difficult (Hywood, 1996, p.33) as since an approximately 1-3 out each 100 people suffer from mental retardation (Winnepenninck at el, 2003, p.2). There was lots of dispute concerning the explanation of mental retardation and till now it remains an interested topic (Chelly at el, 2006, p.1). In agreement with the “American association on mental retardation”, mental retardation is a condition of being unable to perform a sequence of physical, mental and social activities during the childhood till the age of 18 (Causes of retardation, 2005, p.1).

In general mental retardation is pointed out by an IQ below 70 (Chelly at el, 2006, p.2). Based on IQ, there are two types of mental retardation: the “mild” mental retardation accompanied by an IQ in the interval of 50 and 70, and the “severe” mental retardation with an IQ less than 50 (Chelly at el, 2006, p.2). Soon after, this unfavorable condition could be detected by intelligence and behavioral test (Causes of retardation, 2005, p.1). Afterwards, the mentally retarded person dismisses from consideration the rest of the world and manifests kinds of attachment to their private life (Masland at el, n.d, and p.56).

In reality, the strong unfavorable effect of mental retardation on the population makes the detection of the causes of this abnormal functioning indispensable (Winnepenninck at el, 2003, p.3). This is because the perfect knowledge of any abnormal functioning needs the assumption of the causes of the disease (Masland at el, n.d, p.29). There are many genetic, behavioral, and psychosocial causes as to why mental retardation is increasing over the world.

The primary cause of mental retardation depends on genetics which give careful consideration to heredity and agree with the concept that traits are transmitted from generation to generation. From the fact that the brain is a complicated structure, genetic diseases give rise to approximately half of “severe” mental retardation. Simultaneously, mental retardation, health complications and abnormal development are the result of genetic disorders (Genetic causes, n.d, p.p 1-2) which are the issue of disturbance of genes caused by infections and other factors (Causes of retardation, 2005, p.1) . These genetic disorders are not necessarily hereditary and may not have fix symptoms (Genetics, 2005, p.2). Eventually, more than 7000 genetic diseases are established and they can be divided into three categories (Genetic causes, n.d, p.p 1-2): Imprinted gene deregulation, monogenic causes, and chromosomal abnormalities.

First, in the discussion of imprinted gene it is necessary to begin by defining this expression. Genes expressed from only one parent are called genomic imprinting and these genes grow in the genome and have effects on some parts of chromosome 7,11,14 and 15. Disorders in these genes are several and mostly occur during diseases. Besides, this deregulation includes two important syndromes: The Angelman’s and the Prader-Willi (Chelly et al, 2006, p.2). “A paternal deletion gives rise to features of the Prader-Willi syndrome and a maternal deletion gives rise to features of Angelman syndrome”. Starting with the Prader-Willi syndrome, HHHO is the common name of this syndrome and it is not widely distributed. The clinical symptoms of this disease are numeral but the most important symptom in our study is mental retardation. On the other hand, Angelman syndrome famous by the name of happy puppet syndrome has an effect on 0.003% of the population and it can be diagnosed by certain characteristics such as ataxia and extreme mental retardation (Genetics, 2005, p.2).

Second, monogenic disorders are the result of inactive genes that are incapable to synthesize proteins and enzymes leading to mental disorders (Genetic causes, n.d, p.p1-2) because single gene

causes of mental retardation involve mutation in only one gene that will change the functioning of the gene and contribute to subnormal intellectual capacities (Winnepennink et al, 2003, p.29). In this domain it is interesting to note that a small amount of mental retarded people have monogenic disorders (Genetics, 2005, p.2).

In addition, monogenic disorders break down into three categories: The autosomal dominant, the autosomal recessive and the X- linked mental retardation. Actually, the autosomal dominant mental retardation is not widely distributed such as Rubinstein-taybi syndrome which is an example of this disease caused by mutation in the CREB gene situated on 16p13.3 chromosome and stated precisely by many symptoms like a slow development, natural height and many others. Immediately following, autosomal recessive transmission is more frequent than autosomal dominant. In this case the two alleles lost their functions.

An example of autosomal dominant transmission is phenylketonuria involving an error of metabolism from the lack of hydroxylase and the deletions of “four base pairs” in the PRSS12 gene contribute to mental retardation (Winnepenninck et al, 2003, p.29). Next, the X-linked mental retardation results from mutation in the gene on the X chromosome and mostly has an effect on males. 60 out each 100 people with mental retardation and partial of all the X-linked disease present the fragile X syndrome (Martin, 1998, p.22) which result from the inability of FMRI transcription and the absence of its gene. The disorder is characterized by “large ears and elongated face” (Genetics, 2005, p.2). In general a person affected by fragile X syndrome has a low IQ (Martin, 1998, p.9).

Third, chromosomal disorders account for 80% of the genetic disorders of mental retardation (Edgerton, 1979, p 9). These abnormalities occur when there is excess or deficit of chromosomes or change in their construction. For this reason it is not a condition that these genes are inherited.

These chromosomal disorders occur during cellular division when chromosomes separate, disperse

and recombine leading that the genes of the parents are normal (Genetic causes, n.d, p.p 1-2). The most important chromosomes polyploidy are trisomy 13, 18 and 21 (Winnepenninck et al, 2003, p.29) which are disorders that depend on the increase of the maternal age. In the meanwhile, most of the chromosome disorders are caused by Down syndrome which has a specific region of band 21q21.3-21q22 (Genetics, 2005, p.2) and which affects about 0.0012 of the population.

To end this discussion it is important to note that for the next 10 years, genetic etiology will become one of the most remarkable challenges of simple genetic (Winnepenninck et al, 2003, p.29).

After an extended discussion of the genetic causes of mental retardation, It is essential to examine the behavioral causes of this disorder since the general condition of a baby is closely related to the health of the mother (causes of retardation, 2005, p.2). Eventually, many behavioral and physiological states including excessive consumption of substances, blood poisoning and vigorous stress are responsible for abnormal development because these conditions damage the brain and lead to a decrease in its functions (Edgerton, 1979, p.7).

First of all, “substances intake” was a subject to lots of studies because all substances, toxic or not are delivered to the developing embryo by diffusion through the placenta (Kessler, 1965, p.340).

Recently, birth imperfection has been joined with the consumption of alcohol but now scientists are sure that alcohol has a serious negative effect on the embryo (Carrol, 2003, p.p 1-3). And according to the “National institute of alcohol abuse and alcoholism”, the risk of mental illness increases and the intelligence quotient falls below the normal when there is an excessive consumption of alcohol (Edgerton, 1979, p.16).

In the meantime, a professor, Dr.Sandra w. Jacobson, at Wayne state school of medicine in Detroit, declares that alcohol may affect people in different percentages without a specific rule (Carrol, 2003, p.p 1-3).

In addition to alcohol, cocaine has a lot of negative effects on the newborn including language difficulties and many abnormalities and other serious anomalies (Come-Wesson, 2005, p.2). In comparing alcohol to cocaine, scientists found that alcohol act on several neurotransmitters. From this fact, alcohol attacks several positions in the brain in which make it more harmful.

Simultaneously, NAP a protein that stops alcohol alteration of the L1 sticking property (A fibrous band of tissue that binds together normally separate anatomical structures), but when it is damaged by alcohol it will lead to nervous system complications (Carrol, 2003, p.6). Last but not least it is important to note that cigarettes resemble cocaine in its mode of functioning and also act on the brain (Greenfield, 2004, p.p 1-2).

Second of all, harmful chemicals have an effective portion of the behavioral causes because the nuclear explosions and radiations are in charge of a huge number of mental retardation (Edgerton, 1979, p.17).

Most of the dense metals are poisoning and contributing to a dysfunction in the nervous system and to a mental deficit. In the future, these metals become dangerous when they are incorporated in the body through the environment in a continuous manner. Lead, is an example of heavy metal and this latter is frequently used by children because it is present in paint and beauty products. Similarly, mercury (found in thermometer) affects the brain and has the ability to pass through the placenta to the fetus (Metal toxicity, n.d, p.4).

Third of all, it is known that pregnancy has a particular touch in women and disposes their life to new emotional changes including stress (Stress and prematurity, 2006, p.1). Faced with long periods of stress, the fetus movement will become greater (Kessler. 1965, p.340). Simultaneously, extraordinary stress interferes with the maturation process which leads to mental retardation (Stress and prematurity, 2006, p.1) not straight away but in infancy and adolescence period of the child's life.

Actually, the increase in the level of the peptide CRH stops the habitual development of dendrites and alters the growth of nerve cells (Stress inhibit development, 2004, p.1). During this period, prostaglandins are released from CRH hormone produced in the brain. On the other hand, it was noticed that stress will change women's behavior and direct them to unfavorable substances as cited above (Stress and prematurity, 2006, p.2).

Lastly, sociocultural retardation attacks a wide percentage of people whereas clinical retardation discussed before attacks only one over four of the population (Masland et al, n.d, p.49). From this fact most of the world gives social events lots of importance as factors causing mental retardation (Heiny, 1971, p.244) because this disorder may be a persistent effect in the case of slow intellectual improvement (Masland et al, n.d, p.49).

Actually, psychosocial causes are strongly dependent on social classes and family.

Beginning with social classes, it was observed that poverty represents a primary cause of this complicated disease shown mostly in developed countries (Poverty, n.d, p.2). In these areas, there is no adequate nutrition and a low IQ takes place in comparison with people having better economical conditions (Kessler, 1965, p.340).

Eventually lots of research gives evidence being mentally and physically unfit is the result of a lack of nutrition, specifically protein. This insufficient nutrition inhibits growth, the brain and intellectual's capacities (Masland et al, n.d, p.67-69).

That's why the majority of retarded persons arise from inferior classes with insufficient financial gain and unhealthy housing (Masland at el, n.d, p.50).

Immediately following, the family has more of an effective influence on the mental development of the child than poverty (Rutter, 1979, p.2).

Subsequently, Infant is elastic; he is susceptible to learn and develop skills from his entourage. So childhood is a mirror reflecting the person's experiences which allows researchers to deduce that bad experiences manifest mental retardation (Kessler, 1971, p.345).

In the 1972 review it was suggested that perceptual and linguistic experiences played the main environmental role in the development of intelligence and that personal mothering (although important for other aspects of development was largely irrelevant for cognitive growth. The role of mothering and of interpersonal relationships can be assessed by examining the intellectual development of children reared in environments which are deviant in these respects (Rutter, 1979, p.2).

Simultaneously, in comparing children arising in their own families with children arising in institutions, society remarks those institutional infants are retarded intellectually whereas the other categories of children are not.

In case of disorganized families, unhealthy symptoms occur (Kessler, 1965, p.p 342-345). And most probably large families are susceptible to develop mental disorders. Soon after, studies proved that good relations between family and the child from six months till three years are indispensable to simplify the life of the child and permit him to continue his activities normally (Cumming, 1961, p.p 196-197).

Then, parental attachment deals with successful integration in the society and a healthier development (Rutter, 1979, p.3).

In the end, accepting the reality that you have a mental retarded child is hard and painful, since mental retardation is a dramatic condition (Winnepenninck at el, 2003, p.40).

On the other hand, it will be better for parents to read books about the illness to understand it more and take some actions to prevent this disaster. It is important to note that a huge number of children, in Europe, were affected by mental retardation because of the inability of medicine to perceive these causes at the different stages of growth. But now, due to the progress in education and medicine such as prenatal diagnosis, the number of retarded people decreases enormously (Hywood, 1996, p.p 34-35).

Finally, the issue is to support and increase the rate of this improvement (Hywood, 1996, p.38) by breaking “residual rules” and trying to get effective help.

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