Enliven Archive
Intensifying Thoughts

Mini Literature Review www.enlivenarchive.org *Enliven: Journal of Stem Cell Research & Regenerative Medicine*

ISSN: 2379-5751

Non Disjunction (Extra Chromosome 21(T21) and Down Syndrome (DS)) is Not a Maternal Cause. It is a Parental Issue (50% Mother -50% Father) Mini – Literature – Review An appeal to all mothers throughout the world

Dr. Othman Alfleesy*[1]

[1]*Associate Professor of Forensic Medicine, Department of Forensic Medicine and Pathology, Faculty of Medicine and Health Sciences, Aden University, Aden, South Yemen*

***Corresponding author**: Othman Alfleesy, Associate Professor of Forensic Medicine, Department of Forensic Medicine and Pathology, Faculty of Medicine and Health Sciences, Aden University, Aden, South Yemen, Tel: 00967 770548026; Fax: 00967 2 361894; E-mail: alfleesy2001@yahoo.com

Received Date: 11th July 2018
Accepted Date: 12th July 2018
Published Date: 15th July 2018

Citation: Dr. Othman Alfleesy (2018) Non Disjunction (Extra Chromosome 21(T21) and Down Syndrome (DS)) is Not a Maternal Cause. It is a Parental Issue (50%Mother -50%Father). Enliven: J Stem Cells Regen Med 4(1):001.

Introduction

Since the proposal of Calvin Bridge and Thomas Hunt Morgan in the spring of 1910 for the so called (non-disjunction) [1], as an origin of Trisomy21 and Down syndrome1, a hot controversy had been raised. Ever after that time up-to-date, no scientific ideas or hypotheses were proposed exactly, to put an end to this long controversy. During my review of literature I found a number of questions and comments have forwarded mainly by Fisch and few others. These questions and comments have summarized the confusion in the researches of this unsolved issue (trisomy 21 and down syndrome). This longstanding (dogma) by scientists about non disjunction trisomy 21 as a maternal cause had arrested a creative thought and losing decades of research (108 years) based on this wrong proposals and interpretation. Previous studies have reported a number of unreliable results, and the direction in studying this issue - (T21 and DS) - was in a wrong path. Nevertheless the false accusation against mother as a leading cause of T21 and down syndrome is continuing till now without any scientific evidence indicating mothers' responsibility.

This might be a result of the prompt responses and acceptance of the researchers to any new hypothesis, despite its uncertainty and wrong interpretation. The researchers and embryologists, since 1936 had gone through the meiotic process and justified this non-disjunction as a maternal cause, surprisingly almost there is consensus that the mothers are the only cause (maternal cause) of non-disjunction process and T21 (DS).

Stations in History of Meiosis and Non-Disjunction

Down syndrome7 is a congenital chromosomal anomaly, which had been described by a British physician named Jon Langdon Down, in 1862 and published and documented in 1866[2]. The condition occurs when there is one extra copy of chromosome 21 in cells.

Dr Jerome Lejeune8, a French scientist made the discovery that down syndrome was the result of chromosomal number, (trisomy 21), in 1959 [3].

What did Scientists Write about Meiosis2?

A number of theories have emerged from time to time attempting to explain the exact mechanism had proposed by a number of scientists to solve and explain the meiotic process, its phases and events (crossing over, non disjunction….etc.).

The scientists had stated during their studies that : The evolutionary origins of meiosis have been a matter of intense debate for decades and are intimately connected to the controversy about the biological value of sexual reproduction itself , which dates from the 19th century (Ghiselin 1988). The origins of meiosis in early eukaryotic history has never been satisfactory explained. And both Maynard Smith (1978) and Hamilton (1995) regarded the origins of meiosis as one of the most difficult evolutionary problem.

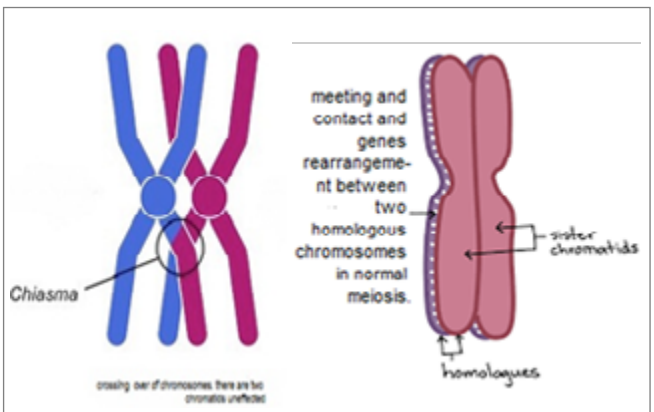
Meiosis is the process by which homologous chromosomes are separated to form gametes. Gametes contain only one member of each pair of chromosomes. Prior to meiosis, each chromosome is replicated. The replicas, called sister chromatids, remain joined together at the centromere. Thus, as a cell starts meiosis, each chromosome is composed of two chromatids and is paired with its homologue. The chromatids of two homologous chromosomes are called non sister chromatids. Meiosis occurs in two stages, called meiosis I and II. Meiosis I separates homologues from each other. Meiosis II separates sister chromatids from each other.

The Concept of Non Disjunction According to their Old Proposal 3'5

Non disjunction refers to a process that causes two homologous chromosomes to go to the same pole instead of segregation to opposite poles. It is the failure of homologous chromosomes to separate properly during cell division. Finally scientists had stated: the biological mechanism of this phenomenon (non disjunction) are not well understood.

Other added12: Thus, it is thought that the segregation of chromosomes 21, taking place at ovulation and after fertilization in women post puberty is particularly vulnerable and prone to non-disjunction dependent on abnormalities in chiasma formation leading to mechanical instability. Nevertheless, it has been generally accepted that the main problem is ml-segregation of chromosomes 21 in an original disomy 21 oocyte, a dogma most recently re-iterated by Oliver et al. 2008, 2009, Cheng et al. 2009, Fledel-Alon et al. 2009 and Cheung et al. 2010.

In these diagrams: The old proposal (crossing over, in which two chromatids remain unaffected) while in meeting and contact, the whole chromosome has genes rearrangement. In T21 there is no firm contact and no genes' rearrangement (Figure1 and Figure 2).



In these diagrams: The old proposal (crossing over, in which two chromatids remain unaffected) while in meeting and contact, the whole chromosome has genes rearrangement. In T21 there is no firm contact and no genes' rearrangement.

Brief Explanation

Logically, if there is join of two homologous chromosomes there will be disjoin after pairing, and crossing over as they proposed. But if there is no join (junction), and no (crossing over), how could non-disjunction occur?. Where you can it? , and what can you call it? According to my previous proposal, in the normal meiosis process, there is a meeting and contact of any two homologous chromosomes, during normal meiosis, followed by rearrangement of chromosome genes, and normal division. But when there is a meeting and no (contact) due to their symmetry (identical chromosomes 21), there will be no (rearrangements of genes), between maternal chromosome 21 and paternal chromosome 21 during meiosis, then both chromosomes move to one cell. This leads to the extra chromosome 21 (23+1=24chromosomes) and then to trisomy after fertilization (24+23=47 chromosomes) - this is the way for trisomy 21 and down syndrome.

If the old thought has ever crossed minds of scientists, they never ever solve or explained the matter of extra chromosome 21(T21, DS).

So, if there is crossing over, breakage and reunion, followed by non-disjunction as they proposed (which I do not agree), why does the status of chromosomes 21 (trisomy) were separated not joined together in the cells, as scientist Lejeune have found them?

Wrong old Terms of the Scientists

Crossing over is a wrong term had been applied, because, it is impossible to have complete genetic exchange with two chromatids only (having crossing over), While the other two chromatids are free and unaffected. There is no (non- disjunction), because in Principle, there is no (junction) or (join), in order to have (disjunction), and to have finally (non-disjunction). These terms (crossing over, breakage and reunion, non-disjunction) are not representative to the actual meiosis processes.

New Terms of the Author9-11

In normal meiosis process there is a meeting and Contact takes place between every two homologous chromosomes in order to have complete rearrangement of the whole chromosomes' genes. But here (in T21 &DS), there is no (contact) after meeting takes place between the two identical chromosomes21, and there is no rearrangement of genes. so the two identical (symmetry), chromosomes move together to stay in one cell (extra chromosome=24).

The Differences between Old and New Terms

In their description and explanation, there are: crossing over, breakage and reunion (for genes exchange), while in my explanation there are: meeting and contact and rearrangement of genes. Their other term non-disjunction replaced in my explanation by movement of the chromosomes together to the same pole and one cell.

What are the Wrong Interpretation the Scientists have in their Proposals?

(Use a new approach in order to have a new result (remember Einstein statement)

Unfortunately, there were many mistakes found in the old opinions and proposals of scientists. There was a wrong interpretation, when they have proposed that there is a (decay of the ovum), or (the egg became rusty), these words are sufficient to drop and cancel all suggested theories without any hesitation or further discussion. And must never be accepted by any scientist or a scientific mind. Simply, because this is not a scientific or logic presentation. How does this happen in a living material, and stay for years? You cannot accept it in any branch of medicine or biology. I think some scientists who have no relation to medicine, never imagine this major and funny mistake. It is now more than 75 years since the proposal of maternal age effect in down syndrome was first presented (Pen Rose 1933 – 1934)4, and 58 years since the genetic background in down syndrome involving extra chromosome [4], and the researchers still believing this nonsense opinions.

Discussion

Significant revision by the author has been made in understanding the term non-disjunction of chromosome 21(T21, DS). The scientists had accepted this genetic abnormality as a result of mother's age (maternal cause). In fact, there is a consensus that mother's age is the direct cause of T21 (DS) which is not true, because of no scientific evidence. There are a lot of statements and questions represent failure and unsuccessful of scientists to find a convenient solution or explanation for this issue.

Certainly, almost all scientists were not justice at all either logically or scientifically to determine mothers as a direct cause for non disjunction and T21 (DS). My opinion, if you admit that no one asserts that mothers as the main cause of non disjunction (T21) and Down syndrome children , and also no one of scientists knows why do fathers play no role in causing these abnormalities, and no one knows what does happen?. So, how could you accuse mothers to be the definite cause of non disjunction and defining them absolutely to be the responsible for down syndrome children. Here, I will put a simple and practical example which is occurring always in our daily life as follows : if a man aged 65 years had married a woman aged 22 years, and this wife became a pregnant and had delivered an infant with down syndrome. What do you think?: is the cause of T21 (DS) the father 's age 65 or was the cause of T21, Down syndrome child the mother's age (22 years)?. How could we certainly determine and accuse this innocent mother that down syndrome child is the result of her chromosomal non-disjunction in the meiosis process? The justice of the God – as I believe - wouldn't be so. Also, the science never said that interpretation but the scientists said. The scientists have not been able to explain this process convincingly since its proposal. There are also a number of scientists do not believe in the presentation of their results and unfortunately find their results are unrealistic and contradict each other.

During the time since the first proposal, there is no certain evidence to consider maternal age as a leading cause at all. And they did not specify any factor accurately. This confusion of scientists was due to their confusion in understanding meiotic process.

They ignored the mechanism, they ignored the origin – as Harry Fisch, a professor of urology at Weill Cornell Medical College-stated and based their ideas on the wrong base and path. So, here I pose this question: how could this happen in a creation process? How could a single person only (mother) create this process?

A human creation is a complex one, and must be in couples for partnership and sharing in order to complete the process of creation, as the GOD says. The scientists stated that, the origins of meiosis in human chromosomes history have never been satisfactorily explained, and has always been problematic and still unclear and vague. And the mechanisms underlying the Down Syndrome cases, where the extra chromosome 21 does originate from the father, remains unknown and further studies in this respect are required. They have said also: It is common knowledge to scientists that as a woman's age increases, so does her chance of having a baby with Down syndrome occurs when the egg contains an extra copy of chromosome 21. They said: This kind of error is more likely to happen in older eggs, due in part to the decay of proteins within the egg over time.

This word (decay) – as I mentioned before, unfortunately indicates the ignorance of the scientists with the putrefaction or decay process. How could this take place inside the body, particularly the ovum and the ovary?. How could a de composed volume be fertilized by a sperm. This is illogic and unscientific explanation how could a dead material remain or stay in the body without any inflammatory changes or healing? They resembled egg like an iron rod of a machine that gets rusty with time in storehouse, or like a sardine box in a small grocery.

Why scientists believe that a woman eggs go bad overtime while a man continuous to produce fresh potent sperm. How could this non-physiological difference happen in human being? All cells, tissues, organs. etc, in the human body, all are dynamic, vital, and have similar an atomical characteristics in male and female. The scientists take only maternal age into account wrongly, and this created the false impression for researchers, that only maternal age is the responsible, forgetting any role of paternal age. That is why Fisch stated: scientists are still ignored the effect of paternal age on sperm. "I think we're just at the tip of the iceberg," Fisch says. "We have no idea what other paternal-age effects there are? For genetic abnormalities, it's not just a woman's problem, Fisch said.

Also during my review I found other unreliable Para clinical steps, had put on the table of discussion, that was the Combined test. Fisch said in this concern: the combined test takes only maternal age into consideration, in part because paternal age hasn't yet been studied enough for it to be accurately used as a risk factor. They added: But until more is known about the effect of paternal age, it's difficult to know the true accuracy of the current combined test for Down syndrome. And the medical professionals who conduct screening tests and interpret the results for patients may not understand the role of paternal age, either. "I think there's a lot of ignorance in the field," says Meck.

A number of scientists, the foremost is Fisch - who had dealt with this subject at length- raised a number of important and outstanding questions of high quality in the history of studying this issues. These questions summarized all the puzzling issues in this field that scientists were unable to answer or to explain

Some of these important questions and observations are as follows:

1-According to scientists theories what does non-disjunction mean?
2-What is the reason for the trisomy 21 maternal age effect?
3-Raymond6 stated: Therefore the incidence of trisomy in older mothers must result from something other than increase in non-disjunction.
4-we have no idea what other paternal age effects them.
5-why are not more scientist looking in both, maternal and paternal?
6-why does not the extra chromosome 21 originate from the father remains unknown, and further studies in this are required?
7- Why only maternal age had been taken into consideration? They answered: because paternal age has not yet been studied.
8-Fisch said: There is still much more interest in maternal issues than paternal issues, it takes a long time for a paradigm shift in the way.
9-The geneticists Helga Toriello stated: The bottom line is that we don't have a good direction for how to counsel for the effect of paternal age on the mother's risk.

10-Jeanne Meck said: I think there's a lot of ignorance in the field, "A lot of OBGYNs don't understand a lot about prenatal screening. The physicians don't have the time and they don't have the full range of knowledge.

There are a number of scientific errors in discussing this issue which prevented proper logical scientific reasoning. Because the researchers could not get out of this false circle and therefore they continued in the same wrong way.

In these questions and comments they have admitted that there is: A lack of knowledge, there is ignorance, uncertainty, unconvincing interpretation, unreliable results, and the author added, unscientific and illogic proposals.

Alfleesy Suggestion

My reasonable inferences were extracted from previous findings and results of scientists and their questions and observations. My suggestion is based on the following strongest evidences which support it:

1-The previous proposals were inadequate, unsuccessful, unconvincing and illogical (as the scientists have admitted).
2-No scientific evidence for mothers to be a certain cause (maternal cause) for extra chromosme21 and down syndrome.
3-Absence of any paternal participation (contribution) and no study was made. Solution must take both maternal and paternal contributions to account, for any new idea or speculation. The problem is a parental issue, and paternal side plays an important role for its origin. No scientist before have taken this side into consideration.
4- Wrong interpretation or explanation (decay of the ovum or rusty egg.etc.).
5-Wrong old terms in meiotic events: crossing over, breakage and reunion , non-disjunction , which never represent the process (meiosis) status.
6-The process of human creation must have couples (male & female) to be completed.
7- The rare meeting of the two identical (symmetry) chromosomes 21 of both paternal and maternal leads to no (contact and no rearrangement of the chromosomes genes (because they have the same genes and arrangement) and the movement of both chromosomes to the same pole and cell.
8-To get rid of the old concepts about crossing over and non-disjunction
9-It is mandatory to know that the creation process are secret. No one knows its details, except the God. The God says in the holy Qur'an: (I did not make them witness to the creation of the heavens and the earth or to the creation of themselves, and I would not have taken the misguiders as assistants (Surah Alkahf, verse 51)).

Based on all previous points and because of wrong old terms (crossing over, breakage, reunion, non-disjunction), because in principle there is no crossing over in order to have non disjunction, I suggest that there might be, a rare meeting of two identical chromosomes 21 of both maternal and paternal, and because of their (symmetry) i.e having the same number and arrangement of genes. There would be no contact and no rearrangement of genes take place, so they move to the same pole and stay in the same cell. This symmetry of the two chromosomes 21 has a significant role in likeness of the down syndrome children faces (similar phenotype), because it plays a role as cloning.

An Appeal to Mothers

It is a great honor for me to announce to all mothers across the globe that they are not responsible for Trisomy 21 and down syndrome. The old claim by scientists about the mothers' responsibility for non-disjunction process (T21 and down syndrome) was not a true claim at all, and was not a scientific interpretation, it is not your fault,. The responsibility and the cause are a parental issue (50% paternal + 50% maternal) because of the symmetry (identical) of chromosomes 21 of both father and mother, which rarely occurs. The scientists must re-evaluate, and revise again their wrong hypotheses and speculations in this concern. There is nothing abnormal in your egg, and the claim that your egg (decay and rusty) is a funny and a major mistake in the history of science. Because your ovary is not a grocery and your egg is not a sardine box, or an iron rod. And the scientists must remember that the creation is responsibility of the couples (male and female equally) under the will and the hand of our GOD. Down syndrome children are blessed kids, they are the gifts of the GOD to parents. And you must accept this to be a happiest mother and family.

Conclusion

In fact there are cycles, chances, in life of human being and plants and there are events of destiny that occur with the will of our God and cannot be interpreted by scientists. So there is coincidence for a two identical (symmetry) chromosomes 21 from male and female during meiosis process to meet each other (these two chromosomes have the same number of genes and the same arrangement) and as a result of this rare meeting and symmetry (identical), there will be no contact and no rearrangements of genes. So the paternal chromosome 21 (move with) the maternal chromosome 21 and stay with it in the same cell after division. Because of this symmetry, it is similar as chromosomal cloning and the child created with this phenotypic face. All down syndrome children nearly have similar faces.

Comment

It is the same accusation directed to the wives from their husbands when a woman (wife) gives birth to a female (daughter) that she is the responsible (cause). This charge to wives continues for more than 1500 years. until the science have discovered and proved that the male (husband) is the essential cause for the birth of daughters (females) because he (husband) has (X-Y) chromosome in his sperm, while females(wives) have (X-X) chromosomes in her ovum. My question is: why women are always guilty?. Finally the scientists have to discuss thoroughly the proposal of the author based on this new ideas and speculation , because which they have supposed in the previous decades would be difficult to occur in meiosis. It is an unique suggestion for solving this matter.

References

1. Bridges CB (1916) Non disjunction as proof of the chromosome theory of heredity genetics 1:1-52.
2. Alfleesy O (2017) A One - Step Meiosis of Human Chromosomes with Rearrangement of Genes, No Breakage and No Crossing Over of Chromatids, EJBPS 4: 109-114.

3. 7-Down JL (1862) Observations on an Ethnic Classification of Idiots.
4. Alfleesy O (2018) Why Do they (abort) Down Syndrome Fetus inside the Womb. Journal of Genetic Disorders 2: 4.
5. Al-Fleesy OSH (2017) Why Have the Scientists Accepted the Illogical Proposal of Zuckerman for 60 Years? J Mol Biomark Diagn 8: 1000331.
6. Wilkins AS, Holliday R (2009) the evolution of meiosis from mitosis. Genetics 181: 13-12.
7. Darlington C.D, Dark S.O.S (1932) The origin behaviors of chiasmata. II. Stenobothrus parallelus- cytologia 3: 169-185.
8. Penrose LS (1934) The relative etiological importance of birth order and maternal age in Mongolism. Proc R Soc B Biol Sci 115: 431-450.
9. Nicolaidis P, Petersen MB (1998) origin and mechanism of non disjunction in human autosomal trisomies, human reproductions 13: 313-319.
10. Raymond J. Kloss, Randolph M. Nesse (1992) Trisomy: chromosome competition or maternal strategy Increase of trisomy incidence with increasing maternal age does not result from competition between chromosomes Ethology and sociobiology 13: 283-287.
11. Lond Hosp. Rep. 3, 259 – 262.
12. Lejeune J, Gauthier M, Turpin R (1959) The human chromosomes in tissue culture. C R Hebd Seances Acad Sci 248: 602-603.
13. Langman's, TWS Adler (2015) Medical Embryology,13th Edition.