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CASE REPORT

Dilemma of Labor Management in Lethal Anencephalic Fetus

Dilema Managemen Tatalaksana Persalinan pada Anencephali sebagai Janin Letal

Imelda Yunitra[1], Hervi Wiranti[1], Rully Ayu Nirmalasari[1], Atut Cicih Mayasari[1], RM Denny Dhanardono[1], Laksmi Maharani[1]

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ABSTRACT

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Keywords: Anencephaly; Delivery Process; Fetal Condition; Ultrasound Scanning.

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Anensefali merupakan salah satu kelainan kongenital pada sistem saraf pusat, yang ditandai dengan tidak terbentuknya sebagian besar otak dan tengkorak, yaitu hemisfer serebri, serebellum, medulla spinalis dan tractus piramidalis. Kondisi ini tergolong fatal karena janin dengan anensefali umumnya tidak mampu bertahan hidup setelah lahir. Prevalensi kondisi ini terjadi 1: 1000 kelahiran. Deteksi dini melalui ultrasonografi prenatal sangat penting untuk menagemen selama kehamilan. menentukan rencana persalinan yang tepat dan mencegah komplikasi maternal. Kami melaporkan kasus seorang pasien wanita usia 33 tahun, usia kehamilan 40 minggu dengan diagnosis prenatal anensefali berdasarkan hasil USG sejak usia kehamilan 24 minggu. Pasien sudah mendapatkan informasi mengenai keadaan janin namun tetap ingin melanjutkan kehamilan. Persalinan direncanakan dengan induksi persalinan sesuai indikasi kehamilan postterm, namun dalam perjalanannya tidak ada kemajuan persalinan, dan diputuskan untuk menyelesaikan persalinan melalui sectio caesarea demi keselamatan ibu. Operasi berjalan lancar, bayi lahir dengan kondisi sesuai hasil pemeriksaan

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Kata Kunci: Anensefali, Kelainan Janin, Persalinan, Ultrasonografi.

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Anencephaly is a major congenital anomaly caused by the failure of cranial neural tube closure that should occur at day 23-26 after fertilization. This condition resulted in the absence of some parts of the brain, skull, and skin, categorized as a severe neural tube defect with a fatal prognosis. The prevalence of this condition is 1 in 1000 deliveries. In Indonesia, based on data collected from 2014 to 2015, 231 babies were born with varying characteristics and conditions. Approximately 87% of the babies were born with a single type of abnormality, while the remaining 13% were born with more than one type of abnormality.[1]

This condition is characterized by a severe malformation of the cerebral and cerebellar structures, while the brain stem remains intact. The etiology of this condition was not clearly understood and assumed to be influenced by genetic and environmental factors. The incidence of this condition varies between 1 in 5,000 to 1 in 2,000 deliveries, depending on the geographic area, with a higher incidence found in populations from England, China, Mexico, and Turkey. The prevalence of this condition in the US was reported around 0,1-0,7 per 1000 deliveries, while in Europe it was 0,2-1 per 1000 deliveries, 12 per 10,000 deliveries in Iran, 10.4 per 10,000 deliveries in China, 0.5-0.6 per 1000 live births in Singapore, and 0.5-6.5 per 1000 live births in India.[2,3]

Diagnosis of this condition can be made by ultrasound scanning in the first trimester (11-14 weeks of pregnancy). Most baby delivered with this condition could not survive the first 24 hours of their life. Parents of babies with this anomaly should be informed clearly about this probability, and can freely ask for pregnancy termination according to their religion and the law.[4]

CASE REPORT

A 33-year-old pregnant woman was referred to Radjak Hospital, Cileungsi, at 40-41 weeks of pregnancy with anencephalic fetus. This was her third pregnancy, following two previous pregnancies that ended with two healthy babies. The patient has no complaints of labor pain or any other labor signs. From the anamnesis, it was determined that antenatal care was not regularly received. At her 24 weeks of pregnancy, an ultrasound scan was performed, and the doctor found that the baby was anencephalic. The patient has been informed about this condition and offered a termination, but she refused to do so and is willing to continue the pregnancy. A history of taking medication without a prescription or having a congenital anomaly in the family was denied. During this pregnancy, the patient was not regularly taking folic acid as recommended.

The physical examination revealed the patient to be in a normal condition, with normal vital signs. Obstetrical measurements were normal, with fetal position cephalic, still above the pelvic inlet. From vaginal examination, it was obtained that the cervix was still closed and posterior. Bishop's score at that time was 2. Induction of labor was then performed. After being monitored for a certain time, the labor process showed no improvement, so a cesarean section was performed due to the maternal condition. The baby was born by c-section, weighed 3000 grams with anencephaly and micropenis, and sent to the baby ward. Figure 1 demonstrates a fetus with the absence of cranial bones (anencephaly), while Figure 1 reveals an additional anomaly, specifically micropenis.

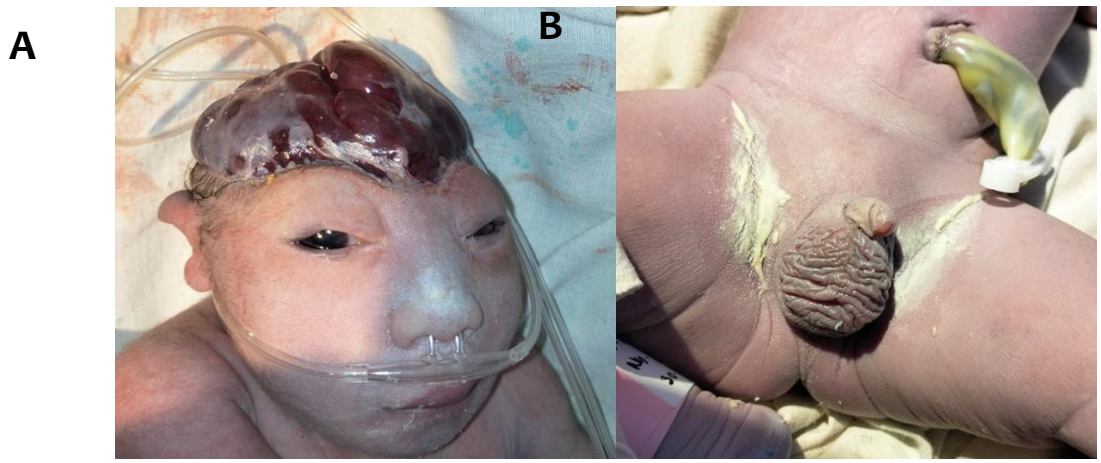

Figure 1. Neonates with anencepali abnormalities: (A) Neonates without a skull; (B) micropenis abnormalities

DISCUSSION

The etiology of anencephaly is not yet clearly understood, but it is assumed that an interaction between genetic and environmental factors plays a role in this condition. One identified cause was a gene that participates in the protein synthesis of folic acid metabolism.[2] Some study found some risk factors such as socio-economic status, maternal age and occupation, smoking and alcohol habit, obstetrics history, early pregnancy infection, maternal diabetes/ obesity and certain medication during pregnancy.[2,5-7]

Anti-epileptic drugs were one of the most influential environmental factors. Some recommendations that were considered to minimize the emergence of neural tube defects were folic acid supplementation and lamotrigine, carbamazepine, and phenytoin level monitoring. Valproic acid is considered the most teratogenic drug that should be avoided during pregnancy. Isotretinoin acid and Selective Serotonin Reuptake inhibitors (SSRIs) were also considered related to a higher risk of getting anencephalic fetus.

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could be contaminated with fertilizer and animal waste, pesticides, organic thinners, etc. Exposure within the last 5 years in women, and in the periconceptional phase in men, also increases the risk of having neural tube defects.

Diabetes, hyperinsulinemia and obesity (Body mass index > 30 kg/m2) were also related to this condition. On the other hand, drugs used for weight loss consumed before or around the early pregnancy phase also doubled the risk of having neural tube defects.[8] In this specific case, the possible cause of anencephaly was considered the folic acid deficiency, since any other risk factors were not found. The patient was not regularly taking the folic acid due to emesis during the early gestational phase.

In this case, ultrasound scanning was not performed regularly, but at 24 weeks of gestation, it was found that the skull bone was missing. Ultrasound imaging, along with amniocentesis and urine estriol level measurement, can be used to diagnose fetal anencephaly. A missing skull bone on an ultrasound, increased alpha-fetoprotein (AFP) from amniocentesis, and low urine estriol levels can be signs of fetal neural tube defects. Anencephaly can be detected between 11-14 weeks of gestation via ultrasound, marked by absent skull ossification, so biparietal diameter could not be measured.[1] Amniocentesis was performed to measure increased AFP levels in the amniotic fluid, which occurs in cases of anencephaly and other fetal neural tube defects. If AFP levels are elevated, acetylcholine esterase levels should also be measured, as increased levels indicate exposure of neural tissue. Estriol in maternal urine reflects placental and fetal adrenal gland function and correlates with fetal development. In fetuses with anencephaly, estriol levels are usually low.

In anencephalic fetuses, there is an increase in transudation from the exposed meningeal tissue, which may cause polyhydramnios, as indicated by an amniotic fluid index greater than 24 mm on ultrasound scanning. This condition may be detected as early as the second trimester of gestation, which was missed in this patient. [4,9] in a normal pregnancy, the neural tube closure should occur at day 24 after fertilization. This condition is also associated with anomalies of internal organs, including hypoplastic lungs, syndactyly, cyclopia, clubfoot, palatal cleft, renal malformation, imperforate anus, heart malformation, thymic enlargement, and the absence of a thumb.[10] In this patient, a palatal cleft and a micro-penis were found along with the absence of the skull and some parts of the brain.

Termination of lethal anencephalic fetal pregnancy is still a problem, because some issues take part in decision-making, such as religion, law, moral, and ethical issues. So the management of this specific condition is not based only on medical considerations. For example, due to a moral perspective, despite the reality of this lethal fetal condition, the baby born with this condition still has the right to live. On the other hand, women with this pregnancy also have the right to decide whether or not to terminate her pregnancy, based on her physical, mental, and emotional well-being.

Based on the law, Indonesia has a complex legislation related to abortion. Punishment and sanction of abortion practice is stated in law, but still there is a space for safe abortion in special conditions, including in pregnancy with severe fetal anomaly, in order to protect maternal physical and mental well-being. The World Health Organization (WHO) has also spotted the high number of maternal deaths due to unsafe abortion, and the importance of access to safe

abortion, especially in pregnancies with severe fetal conditions.[11] For example, in Turkey, abortion in specific fetal condition is not prohibited, but 32% cases have chosen to continue their pregnancy, due to religion. Continuing the pregnancy will end in a specific delivery complication, such as shoulder dystocia.[4] The labor process in anencephalic fetus usually does not start spontaneously, caused by dysfunction of the hypothalamic-hypophysis axis, so in many cases the pregnancy continues to post-term.

To prevent a recurring condition, it is essential to increase the maternal folic acid level at the beginning of pregnancy. The human body cannot produce folic acid, so it must be obtained through an external supply. The sources of folic acid include green vegetables (such as spinach, broccoli, and asparagus), beans, fruits, wheat, seafood, and eggs. Folic acid supplementation around conception has been known as a means of preventing fetal neural tube defects. A study in York, England, and Northern Ireland has shown that consumption of folic acid could lower the incidence of NTD by 91% and 83% respectively. The standard guideline from WHO recommends that all pregnant women should take 400µg of folic acid daily until 12 weeks of pregnancy. Women with a history of NTD should take 5 mg of folic acid per day, in addition to a diet rich in folic acid. According to the Centers for Disease Control and Prevention (CDC), a high-folic diet in all reproductive women can prevent 150,000-210,000 NTD cases, reducing the total number of cases from 300,000.[10]

CONCLUSION

The management of pregnancy with anencephalic fetuses is always problematic, either for doctors or patients. Despite clear legal protection and WHO recommendations, religion, social norms, and ethics still complicate the decision. Vaginal delivery is still the best choice, but maternal well-being has to be considered in the decision-making.

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AUTHORS CONTRIBUTION

All authors contributed to collecting clinical data, analyzing cases, reviewing literature, and preparing the manuscript. The first author, IY, led the manuscript writing and case discussion, while the other authors, HW, AC, DD, LM, RA, participated in critical review, editing, and final revision.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in the preparation and publication of this case report.

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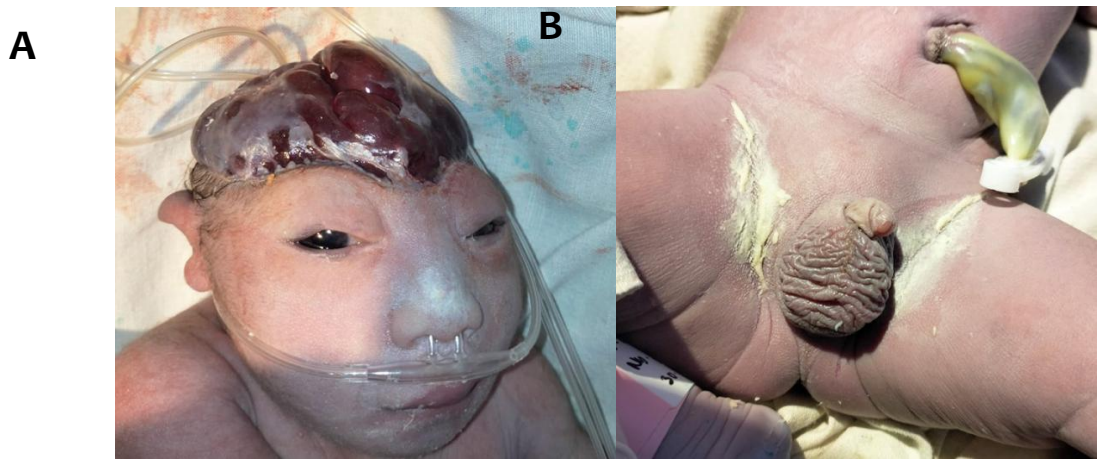

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To prevent a recurring condition, it is essential to increase the maternal folic acid level at the beginning of pregnancy. The human body cannot produce folic acid, so it must be obtained through an external supply. The sources of folic acid include green vegetables (such as spinach, broccoli, and asparagus), beans, fruits, wheat, seafood, and eggs. Folic acid supplementation around conception has been known as a means of preventing fetal neural tube defects. A study in York, England, and Northern Ireland has shown that consumption of folic acid could lower the incidence of NTD by 91% and 83% respectively. The standard guideline from WHO recommends that all pregnant women should take 400µg of folic acid daily until 12 weeks of pregnancy. Women with a history of NTD should take 5 mg of folic acid per day, in addition to a diet rich in folic acid. According to the Centers for Disease Control and Prevention (CDC), a high-folic diet in all reproductive women can prevent 150,000-210,000 NTD cases, reducing the total number of cases from 300,000.[10]

CONCLUSION

The management of pregnancy with anencephalic fetuses is always problematic, either for doctors or patients. Despite clear legal protection and WHO recommendations, religion, social norms, and ethics still complicate the decision. Vaginal delivery is still the best choice, but maternal well-being has to be considered in the decision-making.

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AUTHORS CONTRIBUTION

All authors contributed to collecting clinical data, analyzing cases, reviewing literature, and preparing the manuscript. The first author, IY, led the manuscript writing and case discussion, while the other authors, HW, AC, DD, LM, RA, participated in critical review, editing, and final revision.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in the preparation and publication of this case report.

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DILEMMA OF LABOR MANAGEMENT IN LETHAL ANENCEPHALIC FETUS

by Imelda Yunitra FK

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DILEMMA OF LABOR MANAGEMENT IN LETHAL ANENCEPHALIC FETUS

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ABSTRACT :

Background: Anencephaly is a congenital anomaly of central nervous system, caused by disruption in brain and skull development of a fetus, that include the development disruption of cerebral hemisphere, cerebellum, spinal cord and pyramidal tract. This is a lethal condition that most fetus born with this condition cannot survive after being delivered. Early detection by prenatal ultrasound testing is very important to make a correct plan to avoid maternal complication.

Case report: A 33 years pregnant woman was diagnosed of having anencephalic fetus at 24 weeks of pregnancy. Induction of labor was planned at 40 weeks of pregnancy, but the process was impaired, so a cesarean section was performed to save the mother. The baby was delivered with anencephaly just as ultrasound result and died 2 days after being delivered. The mother recovered well and was given education about the importance of folic acid intake for next pregnancy.

Conclusion: Labor management of anencephalic fetus was planned according to medical indication with special individual approach due to obstetric condition. Yet, delivery method has to be based more on mother rather than baby condition, including maternal emotional factor.

Keywords: anencephaly, fetal condition, delivery process, ultrasound scanning

INTRODUCTION

Anencephaly is a major congenital anomaly caused by the failure of cranial neural tube closure that should be happened at day 23-26 after fertilization. This condition resulted in the absence of some part of brain, skull, and skin, categorized as a severe neural tube defect with fatal prognosis. The prevalence of this condition is 1 in 1000 delivery.[1]

This condition is showed as severe malformation of cerebral and cerebellar structure, while the brain stem remained. The etiology of this condition was not clearly understood and assumed to be influenced by genetic and environmental factors. The incidence of this condition was vary between 1 in 5000 to 1 in 2000 delivery, based on geographic area, with higher incidence found in population from England, China, Mexico and Turkey. The prevalence of this condition in the US was reported around 0,1-0,7 per 1000 delivery, while in Europe it was 0,2-1 per 1000 delivery, 12 per 10,000 delivery in Iran, 10.4 per 10,000 delivery in China, 0.5-0.6 per 1000 live birth in Singapore and 0.5-6.5 per 1000 live birth in India.[2,3]

Diagnosis of this condition can be made by ultrasound scanning at first trimester (11-14 week of pregnancy). Most baby delivered with this condition could not survive the first 24 hours of their life. Parents of babies with this anomaly should be informed clearly about this probability, and can freely ask for pregnancy termination according to their religion and the law.[4]

CASE REPORT

A 33 years pregnant woman was referred to Radjak Hospital, Cileungsi as 40-41 weeks of pregnancy with anencephalic fetus. This was her third pregnancy with previous pregnancies ended with 2 healthy babies. The patient has no complain of labor pain or any other labor signs. From anamnesis, it was obtained that the antenatal care was not regularly done. On her 24 weeks of pregnancy, an ultrasound scanning has been performed and the doctor found that the baby was anencephalic. The patient has been informed about this condition, and offered a termination, but she refused to do so and willing to continue the pregnancy. History about taking medication without prescription, or having congenital anomaly in family was denied. During this pregnancy, patient was not regularly taking folic acid as recommended.

Physical examination showed the patient's normal condition with normal vital signs. Obstetrical measurements were normal, with fetal position was cephalic, still above the pelvic inlet. From vaginal examination, it was obtained that the cervix was still closed and posterior. Bishop score at that time was 2. Induction of labor was then performed. After being monitored for certain time, the labor process showed no improvement, so a cesarean section was performed due to maternal condition. The baby was born by c-section, weighed 3000 grams with anencephaly and micropenis, and sent to baby ward.

DISCUSSION

The certain etiology of anencephaly was not clearly known yet, but it is assumed that interaction between genetic and environmental factors take part of this condition. Some identified cause was gene that take part in the protein synthesis of folic acid metabolisms.[5] Some study found some risk factors such as socio-economic status, maternal age and occupation, smoking and alcohol habit, obstetrics history, early pregnancy infection, maternal diabetes/ obesity and certain medication during pregnancy.[5-8]

Anti-epileptic drugs were one of most influencing environment factors. Some recommendations that considered to minimized the emerge of neural tube defects were folic acid supplementation and lamotrigine, carbamazepine and phenytoin level monitoring. Valproic acid considered as the most teratogenic drug that should be avoided during pregnancy. Isotretinoc acid and Selective Serotonin Reuptake inhibitors (SSRI) were also considered related to higher risk of getting anencephalic fetus.

Nitrate exposure can also increase neural tube defects risk, such as in women working with cleaning products, spray brush or paint solution, also in agriculture where water source could be contaminated with fertilizer and animal waste, pesticide, organic thinner etc. Exposure within the last 5 years in women, and in periconceptional phase in men also increase the risk of having neural tube defects.

Diabetes, hyperinsulinemia and obesity (Body mass index > 30 kg/m2) were also related to this condition. In the other hand, drugs that used for weight loss consumed before or around early pregnancy phase were also doubled the risk of having neural tube defects.[9] In this specific case, the possible cause of anencephaly was considered the folic acid deficiency, since any other risk factors were not found. Patient was not regularly taking the folic acid due to the emesis during early gestational phase.

In this case ultrasound scanning was not performed regularly, but at 24 weeks of gestation, it was found that the skull bone is missing. Ultrasound scanning, along with amniocentesis and

urine estriol level, was the measurement that can be done to diagnose a fetal anencephaly condition. A missing skull bone from ultrasound scan, an increase of alpha-feto protein (AFP) from amniocentesis and a low level of urine estriol level can be signs of fetal neural tube defects. Anencephaly could be seen at 11-14 weeks of gestation by ultrasound scan, marked as missed ossification of skull bone, so biparietal diameter could not be measured.[1] Amniocentesis was performed to obtain the increase of AFP level of amniotic fluid, which happened in anencephaly and other fetal neural tube defects. If there is an increase of AFP level, acetylcholine esterase level should also be measured, for the increase level showed an exposure on neural tissue. Estriol obtained in maternal urine came from placenta and fetal adrenal gland, and well correlated with fetal development. In fetus with anencephaly, the level of estriol usually low.

In anencephalic fetus, there is an increase of transudation from the exposed meningeal tissue that may cause polyhydramnios, found as an amniotic fluid index > 24 mm in ultrasound scanning. This condition may detected since second trimester of gestation, which is missed in this patient.[4,10] in normal pregnancy, the neural tube closure should happened at day 24 after fertilization. This condition is also related to anomaly of internal organs such as hypoplastic lungs, syndactyly, cyclopia, club foot, palatal cleft, renal malformation, imperforated anus, heart malformation, thyme enlargement and the missing of thumb.[11] In this patient, palatal cleft and micro-penis were found along the missing of skull and some part of brain.

Termination of lethal anencephalic fetal pregnancy is still a problem, because some issue take part in decision making, such as religion, law, moral and ethical issues. So the management of this specific condition is not based only on medical consideration. For example, due to moral perspective, despite the reality of this lethal fetal condition, the baby born with this condition is still has the right to live. In the other hand, women with this pregnancy also have the right to decide whether will or will not terminate her pregnancy, based on her physical, mental and emotional well-being.

Based on law, Indonesia has a complex legislation related to abortion. Punishment and sanction of abortion practice is stated in law, but still the is a space of safe abortion in special condition, including in pregnancy with severe fetal anomaly, in order to protect maternal physical and mental well-being. World Health Organization (WHO) has also spotted the high number of maternal death due to unsafe abortion, and the importance of access to safe abortion especially in pregnancy with severe fetal condition.[12] For example, in Turkey, abortion in specific fetal condition is not prohibited, but 32% cases have chosen to continue their pregnancy, due to religion. Continuing the pregnancy will end in some specific delivery complication such as shoulder dystocia.[4] The labor process in anencephalic fetus usually do not start spontaneously, caused by dysfunction of hypothalamic-hypophysis axis, so in many cases the pregnancy continue to post term.

To avoid recurring condition, it is important to increase the maternal folic acid level at the beginning of gestation. The human body cannot produce folic acid, so it has to be taken as external supply. the source of folic acid including green vegetables (such as spinach, broccoli, asparagus), beans, fruits, wheat, sea food and eggs. Folic acid supplementation around conception has been known as prevention of fetal neural tube defect. A study in York, England and Northern Ireland have shown that consumption of folic acid could lower the incidence of NTD by 91% and 83% consecutively. The standard guideline from WHO recommend that all pregnant women should take 400μg of folic acid daily until 12 weeks of pregnancy. Women with history of

NTD, should take 5 mg of folic acid per day, add by high folic food. According to Center of Disease Control and Prevention (CDC), high folic diet in all reproductive women will prevent 150,000-210,000 NTD cases from 300,000 cases.[11]

CONCLUSION

The management of pregnancy with anencephalic fetal is always problematic, either to doctors or patients. Despite there is clear law protection and WHO recommendation, religion, social and ethics still make the decision even harder. Vaginal delivery is still best choice but maternal well-being has to be considered in the decision making.




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