Analysis of Ovary Cancer in the Gynecology Room

Nur Ayu Wandira[1], [K]Sri Dinengsih[2], Shinta Novelia[3]
[1, 2, 3]Midwifery, Faculty Health Science, National University of Jakarta
Correspondence author email ([K]): dini_alba@yahoo.com

ABSTRACT

Ovarian cancer is the most common cancer in Indonesian women, with an incidence rate of 14,896 cases in 2020 and a mortality rate of 9,581 cases. According to data from Global Cancer Incidence, Mortality and Prevalence (Globocan), ovarian cancer is the most common cancer among Indonesian women, with an incidence rate of 14,896 cases in 2020 and a mortality rate of 9,581 cases. To determine the factors that influence the incidence of ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital in 2022. Methods: This research is a quantitative study with a case-control design, using primary data with a sample of 54 patients on the 2nd floor of the Gynecology Room. The sampling technique used random sampling. Data analysis using univariate and bivariate using chi square. Research Results: 27 respondents (50%) had ovarian cancer. Variables related to the incidence of ovarian cancer were genetic history (0.000), history of contraception (0.001) and smoking history (0.005) while variables that were not related were obesity (0.268) and age of menarche (776). there is a relationship between genetic history, contraceptive history and smoking history with the incidence of ovarian cancer. It is hoped that women will increase their knowledge about the factors that influence the incidence of ovarian cancer and adopt a healthy lifestyle in their daily activities.

Keywords: Cancer, Ovarium, Genetic, Parity

INTRODUCTION

Ovarian cancer is one malignancy most common gynecology found in women and occupy order second after cancer cervical. Every year 200,000 women diagnosed with ovarian cancer worldwide and 125,000 die Because disease this. One in 78 women in the US (1.3%) is estimated will experience ovarian cancer during his life. Eight twenty percent of 14,000 cases diagnosed ovarian cancer in the United States annually originate from epithelial cells. [1]

According to *Statistics By Country For Ovarian Cancer* data 2011 said that incidents Ovarian cancer in Indonesia is 20,426 cases of 238,452,952 population (Right Diagnosis, 2011). Based on Survey Indonesia Health Demographics numbers incident Ovarian cancer in Indonesia reaches 37.2%, and is the most frequent exist in women aged between 20-50 years and rarely at puberty (Wiknjosastro, 2015). According to *Global Cancer Incidence, Mortality and Prevalence* (Globocan) data , ovarian cancer is cancer most common in Indonesian women, with number the incidence in 2020 is 14,896 cases and numbers death reached 9,581 cases. [2]

Obtained data from the Cancer Hospital Dharmais Jakarta based Registration National Cancer (2008-2012) obtained that ovarian cancer is order number three the most out of 10 cancers in women with amount 9.7%, with age majority is > 65 years.

Happening ovarian cancer arrived Now No is known in a manner Certain the etiology. However, based on existing research, there is a number of possible factor influence happening ovarian cancer. risk factor the that is productive age and increases with age premenopause, excess body mass index (BMI), women who don't once experience pregnancy and numbers parity, history surgery gynecology, therapy estrogen hormone, history family with cancer, as well consumption alcohol and cigarettes . In addition, there are stated research that factor risk divided ovarian cancer top 5 parts big that is factor reproduction (number parity & pregnancy, lactation, as well age menarche and menopause), hormones exogenous (hormonal contraceptives, drugs fertilizer, and therapy hormone replacement), condition related gynecology (endometriosis, PID (pelvic inflammatory disease) and polycystic ovarian syndrome, environment and factors genetic. However someone stated that based on results research and discussion, found that age menarche early, sum parity, history family, and overweight BMI have big meaningful risk to incident ovarian cancer. Temporary parity own no risk meaning to incident ovarian cancer. [3]

Use tool contraception has in a manner consistent associated with decline number incident ovarian cancer p This in accordance with the incessant ovulation hypothesis introduced by Fathalla explained connection between ovulation keep going continuously to happening inflammation and ovarian carcinogenesis epithelium. This happen because mature follicle No broken causing no oocyte can be released resulted happening LH surge (Luteinizing hormone) this can cause ovarian damage. Use tool contraception can hinder happening ovulation and can lower number incident ovarian cancer. Other

research states that use oral contraceptives also have an effect risk factor incident ovarian cancer. Duration use prolonged use of contraceptives to decline factor risk ovarian cancer. Use contraception more from 10 years has a 45% factor more risk low if compared to with use not enough from 1 year. [4]

Women who have history family own 2 times the risk of suffering ovarian cancer compared women who don't own history family. This caused by mutations in the BRCA1 and BRCA2 genes, these two genes are responsible for 90%. answer as reason inherited ovarian cancer to suffering offspring ovarian cancer, meanwhile number hope life patients who carry the BRCA1 and BRCA2 mutation genes by 15% -60% so it is very necessary done screening to sufferers carrying BRCA1 and BRCA2 gene mutations, p with Saydam in 2012 saying that risk of ovarian cancer high in people who have history member his family suffer cancer breast, ovarian cancer, cancer prostate or cancer womb. [5]

Many ovarian cancer found at the age of over 40 years, increasingly tall age so more also high cases found, Research explain that incidence many ovarian cancers found in groups aged 35-50 years (42.1%), while in Sanglah Hospital Denpasar Bali that incident experiencing ovarian cancer enhancement along with increase age, peak incident most ovarian cancer at the age of 40-50 years. [6]

Risk factor other ovarian cancer is age of menarche, on research previously get results high score in the group menarche age 5-12 years, namely 176 people with percentage of 52.2%. Explain that early menarche have risk 3.6 times for experience ovarian cancer. [7]

Ovarian cancer is found at an early stage about 20%. Approximately 94% of patients can endure life more from 5 years after diagnosed, moment ovarian cancer is diagnosed at an early stage. Inspection health in a manner regular, soon ask to doctor moment own symptoms and tests screening from ovarian cancer can become solution for know more ovarian cancer early. The most common screening test for ovarian cancer used are transvaginal ultrasound (TVUS) and tests CA-125 blood. [8]

Based on data in the treatment room gynecology 2nd floor of the pavilion of Faith Sudjudi RSPAD Gatot Soberoto show exists enhancement amount incident ovarian cancer in 3 months last in August by October 2022. There were 19 cases (13.8%) in the month August, in September there were 27 (18.4%) and in October there were 31 (21.9) and occupied case 2 order disease gynecology the most in Gatot Soberoto Army Hospital after NOK Suspect Malignant (Record data Medical R. Nursing gynecology RSPAD Gatot Soebroto Year 2022.

From phenomena such, is required effort preventive and promotive in lower number incident ovarian cancer, for one identify factor risk happening ovarian cancer. This is what makes researcher interested for do study about "Analysis incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022".

METHOD

This study is quantitative with design *case controls* , with using primary data with sample totaling 54 patients on the other 2nd floor of the gynecology room. Retrieval technique sample use *Random Sampling* . Data analysis using *univariate* and *bivariate* uses *chi square.*.

RESULTS

Respondents with incident ovarian cancer as much as 27 (50%) and those who do not happen ovarian cancer in 27 (50 %) of the total 54 (100%), when counted from amount population, then proportion incident ovarian cancer by 27 (27%) of a total of 100 people. respondent with genetic history of 26 (48.1%) and those who do not There is genetic history of 28 (51.9%). Respondents with history non-hormonal contraception by 36 (66.7%) and respondents with history hormonal contraception by 18 (33.3%). Respondents with obesity by 32 (59.3%) and respondents who did not obesity by 22 (40.7%). Respondents with There is history smoke by 20 (37%) and respondents who did not There is history smoke by 34 (63%). Respondents with age of menarche <12 years by 19 (35.2%) and respondents with after menarche ≥ 12 years 35 (64.8%).

Of the 26 respondents who have genetic history, the majority happen ovarian cancer as many as 21 (80.8%) and of the 28 respondents who did not There is majority genetic history No experience incident ovarian cancer as many as 22 (78.6%). Statistical test results with *Chi Square* obtained p value = 0.000 means $p < \alpha$ (0.05), hypothesis proven so can concluded There is connection between history genetics with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022 . From the results analysis obtained more carry on obtained OR value = 15.4 (95% CI: 4.07–58.16) means respondents who have history genetics chance 15.4 times for happen ovarian cancer than respondents who did not own genetic history.

Of the 36 respondents who have history Non-hormonal kb , the majority happen ovarian cancer as many as 24 (66.7%) and from 18 respondents with a history the majority of hormonal contraceptives No experience incident ovarian cancer as many as 15 (83.3%). Statistical test results with *Chi Square* obtained p value = 0.001 means $p < \alpha$ (0.05), hypothesis proven so can concluded There is connection between history contraception with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022 . From the results analysis obtained more carry on obtained value OR = 10 (95% CI : 2.4 - 41.3) means respondents who have history non-hormonal contraception has a 10 times chance of happen ovarian cancer than the respondents with history hormonal contraception.

Of the 32 respondents who were obese , the majority happen ovarian cancer as many as 18 (56.2%) and of the 22 respondents who did not obesity majority No experience incident ovarian cancer

as many as 13 (59.1%). Statistical test results with *Chi Square* obtained p value = 0.268 means p > α (0.05), hypothesis No proven so can concluded No There is connection between obesity with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022.

Of the 20 respondents who have history smoking, the majority happen ovarian cancer as many as 15 (75%) and of the 34 respondents who did not There is history smoke majority No experience incident ovarian cancer as many as 22 (64.7%). Statistical test results with *Chi Square* obtained p value = 0.005 means p < α (0.05), hypothesis proven so can concluded There is connection between history smoke with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022. From the results analysis obtained more carry on obtained OR value = 5.5 (95% CI: 2.4-41.3) means respondents who have history smoke chance 5 times for happen ovarian cancer than respondents who did not history smoking.

Of the 19 respondents with menarche <12 years , the majority happen ovarian cancer as many as 10 (52.6%) and from 35 respondents with a history of menarche ≥ 12 years majority No experience incident ovarian cancer as many as 18 (51.4%). Statistical test results with *Chi Square* obtained p value = 0.776 means p > α (0.05), hypothesis No proven so can concluded no connection between age of menarche with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022.

Table 1. Distribution frequency incident ovarian cancer in patients
In the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022

| Variable | Incident Ovarian Cancer | | | |
| | Case | | Control | |
	f	%	f	%
Genetic History				
There is	21	77,8	5	18.5
Nothing	6	22,2	22	81.5
Contraceptive History				
Non-hormonal	3	11,1	15	55,6
Hormonal	24	88.9	12	44,4
Obesity				
Yes	18	66,7	14	51.9
No	9	33,3	13	48,1
Smoking History				
Yes	15	55,6	5	18.5
Nothing	12	44,4	22	81.5
Menarche age				
<12 years	10	37.0	9	33,3
>12 years	17	63.0	18	66,7
Total	27	100	27	100

In table 1 obtained that from group case that has genetic history as many as 21 (77.8%), in the control group no own genetic history as many as 22 (81.5%), on variable history of contraception in the group case 24 (88.9%) had a history of hormonal contraception , the control

group had history non-hormonal contraceptives as many as 15 (55.6%). obesity variable in the control group with obesity as much 18 (66.7%), in the control group with obesity as many as 14 (51.9%). on variables history smoke that in the group case with history smoke as many as 15 (55.6%), in the control group not have a history of smoking as many as 22 (81.5%). Age of Menarche is ariable Age Menarche in group case with Age of Menarche > 12 years ie 17 (63%), in the control group with Age of Menarche > 12 years namely 18 (66.7%).

Table 2. Relationship Genetic History With incident Ovarian Cancer at the Gatot Soebroto Army Hospital Year 2022

| Genetic History | Incident Ovarian Cancer | | | | p-value | OR |
| | Case | | Control | | | |
	n	%	N	%		
There is	21	77,8	5	18.5	0.000	
Nothing	6	22,2	22	81.5		15,4
Total	27	100	27	100		

Table 2 shows that there is a relationship between genetic history and the incidence of ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital in 2022 (p value = 0.000 p <0.05), with an OR value = 15.4 meaning that respondents who have a genetic history are at risk of 15, 4 times experiencing ovarian cancer than respondents who do not have a genetic history.

Table 3. Relationship History of Contraception With incident Ovarian Cancer at the Gatot Soebroto Army Hospital Year 2022

| Contraceptive History | Incident Ovarian Cancer | | | | pValues | OR |
| | Case | | Control | | | |
	n	%	n	%		
Hormonal	24	88.9	12	44,4	0.001	
Non-hormonal	3	11,1	15	55,6		10
Total	27	100	27	100		

Table 3 shows that There is connection between history contraception with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022 (p value = 0.001 p < 0.05), with value OR = 10 means respondents who have history non-hormonal contraception has 10 times the risk of experiencing ovarian cancer than the respondents with history hormonal contraception.

Table 4. Relationship Obesity With incident Ovarian Cancer at the Gatot Soebroto Army Hospital Year 2022

| Obesity | Incident Ovarian Cancer | | | | pValues |
| | Case | | Control | | |
	n	%	n	%	
Yes	18	66,7	14	51.9	0.406
No	9	33,3	13	48,1	
Total	27	100	27	100	

Table 4 that No There is connection between obesity with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022 (p value = 0.406 means p >0.05).

Table 5 Relationship Smoking History With Incident Ovarian Cancer at the Gatot Soebroto Army Hospital Year 2022

| Smoking History | Incident Ovarian Cancer | | | | p-value | OR |
| | Case | | Control | | | |
	n	%	n	%		
Yes	15	55,6	5	18.5	0.011	5,5
No	12	44,4	22	81.5		
Total	27	100	27	100		

Table 5 shows that There is connection between history smoke with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022 (p value = 0.011 p <0.05), then can concluded With OR value = 5.5 means respondents who have history smoke at risk 5 times experienced ovarian cancer than respondents who did not There is history smoke.

DISCUSSION

1. Incident Ovarian Cancer

Based on results research conducted to 54 respondents obtained results that in 27 (50 %) patients experience ovarian cancer, when you count from amount population, then proportion incident ovarian cancer by 27 (27%) of a total of 100 people, p This influenced by history genetic k, history contraception. History and smoking, numbers the more tall compared to with the data obtained from the Cancer Hospital Dharmais Jakarta based Registration National Cancer (2008-2012) obtained that Ovarian cancer is order number three the most out of 10 cancers in women with the amount is 9.7%. At the Gatot Soebroto Army Hospital Ovarian cancer occupies case 2 order disease gynecology the most after NOK Suspect Malignant (Record data Medical R. Nursing gynecology RSPAD Gatot Soebroto Year 2022).

Research results This in line with research conducted by Wulandari ET, et al in 2019 which results is as many as 93 (48.5%) respondents experience ovarian cancer. Ovarian cancer is cancer deadliest gynecology cause in general new can detected when Already badly, no There is test screening proven

start for ovarian cancer, no There is signs definite start. A number of woman experience abdominal discomfort and swelling. Reason ovarian cancer yet can is known in a manner sure. However, some possible factor cause ovarian cancer can identified. Reproductive factor, factor genetics, use hormone therapy, use of talc powder, and consumption lactose tall can cause happening ovarian cancer in patients with ovarian cancer management is with action surgery, radiotherapy and chemotherapy. [9]

2.   **Relationship between Genetic History with Incident Ovarian Cancer**

Based on results study is known that of the 26 respondents who have genetic history, the majority happen ovarian cancer as many as 21 (80.8%) and of the 28 respondents who did not There is majority genetic history no experience incident ovarian cancer as many as 22 (78.6%).

Statistical test results obtained p value= 0.000 then can concluded There is connection between history genetics with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022 . Obtained OR value = 15.4 means respondents who have history genetics chance 15.4 times for happen cancer ovaries than those who did not own history genetic.

Research results previously that history family is the most dominant variable, however No in line with research conducted by Widodo, et al in 2018 with results show that more ovarian cancer Lots happens in groups sufferers who don't own history family, research conducted to sufferer ovarian cancer in 2018 at H. Abdul Moeloek Hospital show amount sufferers who don't own history family by 32 people (88.9%), and also in line with research conducted at H. Abdul Moeloek Hospital in 2015 which shows result p-value = 1, p this cause between history family with ovarian cancer is not there is a relationship.[10]

Family history of suffering ovarian cancer in the study this show that history family own trend for lowered generation next. This caused because ovarian cancer also has trend familial aggregation, which causes relatives woman who has history ovarian cancer, have exposed risk ovarian cancer in the population general, there is history suffering family ovarian cancer can increase risk happening ovarian cancer in members another family. [11]

Family history women who have either family level one, like mother or you woman with ovarian cancer, have 3 times the risk caught ovarian cancer. Risk the will the more increase, if family level one the with more ovarian cancer from one. [12]

Family (hereditary) is a risk factor ovarian cancer occurs with number incidence of 5% -10%, p This caused because happening mutation BRCA1 and BRCA2 genetics with 50% risk of causing ovarian cancer in the group certain. Mechanism it works is bond with the RAD51 protein during repair strand double DNA, where is this gene carry out repair processes in the cell nucleus, recombination this adapt with chromosome from cell parent, so damage to this gene cause No detected gene damage that occurs within affected cells and cells mutation No can repaired so that grow characteristic cells proliferating malignancy become cancer tissue. [13]

Cancer also has trend familial aggregation, which causes relatives woman who has history ovarian cancer, have high risk caught ovarian cancer in the population general. With thus, history family cancer is factor risk For happening ovarian cancer. There is history suffering family ovarian cancer can increase risk happening ovarian cancer in members another family. With percentage of 1.6% on the whole population. Risk increase to 4 to 5% if member family grade 1 (mother or you bladder) is affected ovarian cancer. Risk increase to 7%, if there are 2 members suffering family ovarian cancer. [6]

Women who have history family own 2 times the risk of suffering ovarian cancer compared women who don't own history family. Gene mutation is responsible answer as reason inherited ovarian cancer to suffering offspring ovarian cancer.

3. Relationship between History Contraception with Incident Ovarian Cancer

Based on results study is known that of the 36 respondents who have history Non-hormonal kb, the majority happen ovarian cancer as many as 24 (66.7%) and from 18 respondents with a history the majority of hormonal contraceptives no experience incident ovarian cancer as many as 15 (83.3%).

Statistical test results obtained p value = 0.001 then can concluded There is connection between history contraception with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022. Obtained value OR = 10 means respondents who have history non-hormonal contraception has a 10 times chance of happen cancer ovary of the respondent with history hormonal contraception.

Other research states that use oral contraceptives also have an effect risk factor incident ovarian cancer. Duration use prolonged use of contraceptives to decline factor risk ovarian cancer. Use contraception more from 10 years has a 45% factor more risk low If compared to with use not enough from 1 year. [11]

Research conducted at Arifin Achmad Hospital was obtained that as much as 75% do not There is history use tool contraception, users contraception pill as much as 9.1%, yield study This in line with research conducted widoso, et al in 2018 with results that No There is connection between tool contraception to happening ovarian cancer (p= 0.473) [14]

Research results This in accordance with The incessant ovulation hypothesis introduced by Fathalla explains connection between ovulation keep going continuously to happening inflammation and carcinogenesis of the ovarian epithelium. This caused mature follicle No broken causing no oocyte can be released resulted happening induced LH surge prostaglandin synthase 2 (PGS-2) gene expression, then will encode enzymes whose activity is very important For rupture follicle. This can influence through DNA damage pressure oxidative in cortical inclusion cysts (CIC) in the ovary, presence damage repeated in layers ovarian surface ovulation cause changes in the regulatory genes division ovarian cells so happen division redundant and elicited cells cancer cell. [11]

Use tool contraception has in a manner consistent associated with decline number incident ovarian cancer p accordance with the incessant ovulation hypothesis introduced by Fathalla explained connection between ovulation keep going continuously to happening inflammation and ovarian carcinogenesis epithelium. This happen because mature follicle no broken causing no oocyte can be released resulted happening LH surge (Luteinizing hormone) this can cause ovarian damage. Use tool contraception can hinder happening ovulation and can lower number incident ovarian cancer. [11] [12]

Contraceptives can give effect protection to ovarian cancer because use tool hormonal contraception can lower amount ovulation so that inflammation and irritation to less tissue in the ovaries as well as avoid invagination cell from lowering Mullerian channels risk happening ovarian cancer. Decline gonadotropin hormone when use Hormonal contraceptives are also associated with decline risk ovarian cancer. Besides that, content Progesterone is also suspected protect from due to ovarian cancer own effect inhibition to proliferation cell ovarian epithelium, in some research in animals progesterone causing cell apoptosis normal ovarian epithelium malignant.

4. Relationship between Obesity with Incident Ovarian Cancer

Based on results study is known that of the 32 respondents who were obese, the majority happen ovarian cancer as many as 18 (56.2%) and of the 22 respondents who did not obesity majority No experience incident ovarian cancer as many as 13 (59.1%).

Statistical test results obtained p value = 0.268 then can concluded not connection between obesity with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022.

Research results with other research with results that more ovarian cancer lots happens in groups sufferers who don't obesity, research conducted to sufferer ovarian cancer in 2018 at H. Abdul Moeloek Hospital show amount sufferers who don't obesity by 19 people (52.8%). [11]

Other research results regarding profile patient ovarian cancer at Sanglah General Hospital Denpasar was found that average body mass index affected patient ovarian cancer is normal, namely 22.77 kg/m^2 in line with study widoso, et al in 2018 with results that no connection between obesity to happening ovarian cancer (p= 0.813). [15]

Experienced woman excess body weight have enhancement risk experience ovarian cancer, occurs enhancement 10% risk of occurrence ovarian cancer. In addition, on research metaanalysis latest of 14 studies conclude woman experiencing obesity ovarian cancer, own continuity life more bad compared to with people with normal weight. This caused by an increase in body fat is the right environment for tumor development. In addition, an increase in body fat will increase adhesion mesothelial cell tumor to be change mesothelial structure of the tumor so cause intraperitoneal metastases.

Research results no show exists connection between ovarian cancer and survivors obesity, p This caused ovarian cancer have a number of factor more risks relate with incident ovarian cancer like exists genetic history, history smoking, user contraception hormonal etc.

5.   Relationship between History Smoke with Incident Ovarian Cancer

Based on results study is known that of the 20 respondents who have history smoking, the majority happen ovarian cancer as many as 15 (75%) and of the 34 respondents who did not There is history smoke majority no experience incident ovarian cancer as many as 22 (64.7%)

Statistical test results obtained p value = 0.005 then can concluded There is connection between history smoke with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022. Obtained OR value = 5.5 means respondents who have history smoke chance 5 times for happen cancer ovaries than those who did not There is history smoking .

A number of study get results that connection between history smoke with incident cancer (p =0.001, smoking one reason happening cancer. 90% cause from all cancer is smoking. Every time you smoke so will inhale at least 60 substances possible carcinogen cause cancer. Research conducted by Rahmatia 2020 got results that). [17]

Smoke is habit to do every day by the people of Indonesia, both by the people male and not close possibility clan girl. People smoke very easily We meet in life everyday, fine in places general, inside home, even where it should be free from cigarette smoke like House hospitals, health centers and facilities other health. Circumstances this reveal that lack of awareness by society about danger from cigarette smoke good For self Alone nor for other people there surrounding. [17]

Smoking and cancer very related indeed in between There are about 4000 compounds in cigarette smoke about 100 compounds that are trigger emergence cancer (carcinogen), causes mutations (mutagens), and some tumor promoters. Between compound trigger cancer, group compound Polycyclic Aromatic Hydrocarbons (PAHs) are the most responsible answer as reason occurrence and development cancer (next called compound carcinogenic). Compound the happen as consequence from burning compound carbon in general, including smoking materials and will regardless along with cigarette smoke and inhaled enter to in body through channel breathing. So, both those who smoke, and those who do not smoke but inhaling cigarette smoke (smoker passive) equally risky caught substance carcinogenic it and risky got cancer. [18]

Compounds (eg benzo(a) pyrene and dimethylbenz (a) anthrazene) in body will experience change chemical (metabolism) into more compounds reactive. Compound reactive the furthermore will react with compounds macromolecules inside cells, including DNA so form bond difficult covalent regardless. There is a bond covalent will interfere with the normal biochemical processes of cells and even will trigger exists change genetics (mutation). It's been proven that PAH compounds can cause

mutation of the p53 gene, an important gene in regulation cell cycle. There is a mutation the can cause change regulation cell, for example the original cell no split will spurred for keep going split. Circumstances such cells here's what to get raises cancer, that is development cells that don't control and disrupt the environment. [19]

Cigarette smoke with the PAH compound, besides can cause mutation directly on DNA it also can spur Activation factors trigger division cells, such as NF-kB and AP1. A number of study show that the cell cultures were exposed to with cigarette smoke will increase active and stimulating NF-kB levels expression of cyclin D protein, an indispensable protein For beginning cell division. With such a trait This so PAH compounds will also can trigger more tumor development hurry again. [19]

On the side PAHs, Nicotine and 4-(methylnitrosoamino)-1-(3-pyridyl)-1-butanone (NNK) are two compounds that are also very potential trigger growth cancer. Nicotine and NKK proven can spur enhancement proliferation lung tumor cells with activate NF-kB pathway and spur expression cyclD. Nicotine even can trigger angiogenesis in cancer breast with mechanism similar to VEGF (endogenous angiogenesis factor). Angiogenesis is incident formation vessels blood new consequence from stress and oxygen situations deprivation (reduction). Formation vessels blood new this intended for overcome need nutrition and oxygen from cell so that cells the will sufficient his needs For growing. With ability nicotine is very potent for speed up tumor development. Circumstances it would also be very dangerous for cells that have potentially become cancer. Because cigarette smoke is very dangerous to Who course, fine smoker active nor passive.

6. Relationship between Age of Menarche with Incident Ovarian Cancer

Based on results study is known that of the 19 respondents who were at menarche <12 years, the majority happen ovarian cancer as many as 10 (52.6%) and from 35 respondents with a history of menarche ≥ 12 years majority No experience incident ovarian cancer as many as 18 (51.4%).

Statistical test results obtained p value = 0.776 then can concluded No There is connection between age of menarche with incident ovarian cancer in patients in the Gynecology Room of the Gatot Soebroto Army Hospital Year 2022.

Risk factor other ovarian cancer is age of menarche, in the study of Johari and Siregar (2011) found results high score in the group menarche age 5-12 years, namely 176 people with percentage of 52.2%. Yanti and Sulistianingsih 's research (2015) explains that early menarche have risk 3.6 times for experience ovarian cancer (International Agency for Research on Cancer, 2018).

Study other researchers that menarche age vs backwards with risk ovarian cancer. further studies must investigate is connection between age of menarche and risk ovarian cancer is modified by other factors (eg , polymorphisms genetic). Apart from that, what connection the different according to level cancer or histotype ovarian cancer requires study further. [20]

Epidemiological studies has report connection between age of menarche with number incident ovarian cancer. In addition, there are connection backwards between age of menarche with number incident ovarian cancer. However, relationship between age of menarche with number incident ovarian cancer is limited borderline and invasive serous ovarian cancer older menarche age old too become factor risk for lower happening ovarian cancer. This caused because menarche age can reduce amount ovulation matter in accordance with hypothesis ovulation keep going continuously explaining the more often happening ovulation the more big possibility happening ovarian cancer. In addition, the age of early menarche relate with cycle onset more ovulation fast cause high androgens can increase epithelial cell apoptosis, at the same time androgens can also stimulate deoxyribonucleic acid (DNA) to reduce cell death. This is what then can cause happening growth cancer consequence damage secondary to epithelial cells [7]

Early menarche no relate with happening ovarian cancer caused there are other factors like pattern life that doesn't Healthy like consume food Ready food and food high fat content, diet, consuming alcohol, radiation beauty, and so on.

CONCLUSION

There is a relationship between genetic history, relationships between history contraception, history smoke with incident ovarian cancer. No connection between obesity and age of menarche with incident ovarian cancer.

REFERENCES

1.   Gubbels JAA, Felder M, Horibata S, et al. MUC16 provides immune protection by inhibiting synapse formation between NK and ovarian tumor cells. *Mol Cancer*. 2010;9:1-14. doi:10.1186/1476-4598-9-11
2.   Gainotti S, Mascalzoni D, Bros-Facer V, et al. Meeting patients' right to the correct diagnosis: Ongoing international initiatives on undiagnosed rare diseases and ethical and social issues. *Int J Environ Res Public Health*. 2018;15(10). doi:10.3390/ijerph15102072
3.   Hendrix Bm, Walker Jn. The precipitating action of ethanol and acetone upon egg albumin. *Tex Rep Biol Med*. 1949;7(3):410-416.
4.   Tsilidis KK, Allen NE, Key TJ, et al. Oral contraceptive use and reproductive factors and risk of ovarian cancer in the European Prospective Investigation into Cancer and Nutrition. *Br J Cancer*. 2011;105(9):1436-1442. doi:10.1038/bjc.2011.371
5.   Afifah T, Musadieq M Al. Pengaruh Kepuasan Kerja Terhadap Motivasi Kerja dan Dampaknya Terhadap Kinerja (Studi pada Karyawan PT Pertamina Geothermal Energy Kantor Pusat Jakarta). *Jurnal Administrasi Bisnis (JAB)*. 2017;47(1):122-129.
6.   Agusweni T, Dewi YI, Erwin E. Gambaran Faktor Risiko Insiden Kanker Ovarium Di Rsud Arifin Achmad Provinsi Riau. *J Ners Indones*. 2020;11(1):36. doi:10.31258/jni.11.1.36-50
7.   Tahun BL, Parsaoran R, Simamora A, Hanriko R, Dewi R, Sari P. Hubungan Usia , Jumlah Paritas , dan Usia Menarche Terhadap Derajat Histopatologi Kanker Ovarium di RSUD Dr . H . Abdul Moeloek The Relationship of Age , Parity , and Age at Menarche to the Grading of Ovarian Cancer Histopathology at RSUD Dr . H . Abdul Moeloek Bandar Lampung Period 2015-

2016. 2017;7(14):7-13.

8. Lisnawati. Gambaran Faktor-Faktor Risiko Penderita Kanker Ovarium Di Rsud. Labuang Baji Makassar Tahun 2013. Published Online 2014.

9. Ela Hening Rahayu. Studi Dokumentasinausea Pada Pasien Dengan Kanker Ovarium. Published online 2020.

10. Yulidian Nurpratiwi1, Tiarah Asriningrum2 Tan. Analisis Faktor Yang Mempengaruhi Tingkat Keparahan (Stadium) Pasien Kanker Ovarium Di Rs Sentra Medika Cikarang. 2021;03(01):2745.

11. Widodo J, Wijaya SM, Rudiyanto W, et al. Hubungan Faktor Risiko (Riwayat Keluarga , Obesitas , dan Alat Kontrasepsi Terhadap Derajat Histopatologi Kanker Ovarium di RSUD Dr . H . Abdul Moeloek Bandar Lampung Tahun 2018 The Relationship of Hereditary , Obesity , and Contraception to the Grading of Ovarian Cancer Histopathology at RSUD Dr . H . Abdul Moeloek Bandar Lampung Period 2018. 2019;8:154-160.

12. Factors R, Cancer O, Factors R, et al. Ovarian Cancer Causes , Risk Factors , and Prevention Ovarian Cancer Risk Factors. :1-17.

13. Mehrgou A, Akouchekian M. The importance of BRCA1 and BRCA2 genes mutations in breast cancer development. Published online 2016:1-12.

14. Astri A, Rivaí SB, Desfita S, Yunita J. Determinan Kejadian Kanker Payudara Pada Wanita Di Rsud Arifin Achmad Provinsi Riau Tahun 2019. 2020;10(2):174-179.

15. Saat P, Di PC-, Djamil RM, et al. Jurnal Keperawatan Muhammadiyah. 2021;6(2).

16. Reid BM, Permuth JB, Sellers TA. Epidemiology of ovarian cancer : a review Pathologic classification of OC. Published online 2017:9-32. doi:10.20892/j.issn.2095-3941.2016.0084

17. Cahyadie R. Hubungan Kebiasaan Merokok Dengan Kejadian Kanker Paru Di Rsud Ulin Banjarmasin. Published online 2016.

18. Dewi YI. Hubungan riwayat merokok dengan stadium ca paru.

19. Ewa B, Danuta Š. Polycyclic aromatic hydrocarbons and PAH-related DNA adducts. Published online 2017:321-330. doi:10.1007/s13353-016-0380-3

20. Ting-Ting Gong1, Qi-Jun Wu2,3, Emily Vogtmann4, Bei Lin1 and Y-LW. Age at menarche and risk of ovarian cancer: a meta-analysis of epidemiological studies. 2014;132(36):2894-2900. doi:10.1002/ijc.27952.Age