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Impact of Cigarette Smoking on Ovarian Cancer in Sulaimani City

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Abstract

Background—Smoking is a risk factor for mucinous ovarian cancer, but its effects on other ovarian cancer subtypes and on overall ovarian cancer risk are unclear.

Methods— This study was a case control study; it was conducted in Hiwa hospital for oncology in Sulaimani city. This study conducted from the 1st of June, 2019 to 1st of April 2020, involving 100 ovarian cancer patients and 100 female appeared normal without ovarian cancer as a controls. All subjects who agreed to participate signed a consent form, answered a data collection sheet about personal information as age, education, marital state ,education, economic status , physical activity and special habits especially exposure to passive smoking .

Results— The mean age of the examined subjects wss 44.9 ± 13.9 and 37.9 ± 13.7 for both cases and control groups respectively, with a significant difference ($p< 0.001$) Most cases were house wife 65% and 32% were illiterate with high significant difference ($p< 0.001$). 40 % of cases were Sufficient economic state . About cigarette smoking (5% , 3%)of women were active, (2%, 0%) quit, and (31%, 16%) passive smokers and the remaining(62%, 81%) were never smokers in case and control groups respectively . So passive women more prone to ovarian cancer with a significant difference $p =0.02$ Especially those with > 5 years passive smoker (87.1%) comparing with 5 years and less in cases group and compared to control groups $p< 0.001$.

This study revealed that passive smoking was associated with serous ovarian cancer(15.5%). Majority of the patients complained from abdominal pain and abdominal distension (76%) as the first presenting symptom.

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Conclusions— the mean age of Ovarian cancer woman was 44.9 ± 13.9 and most of the age of patients had ovarian cancer were between 40-50 Years. Passive smoker women more prone to ovarian cancer especially those with > 5 years passive smoker . Passive cigarette smoking may be associated with serous ovarian cancer .

Keywords: Age, Cigarette smoking, sign &symptom

Introduction

Ovarian cancer is the most lethal gynecologic malignancy and is the fifth most common cause of cancer-related death among women (ZohreMomenimovahed et al., 2019). Although ovarian cancer has a lower prevalence incomparison with breast cancer, it is three times more lethal,The highmortality rate of ovarian cancer is caused by asymptomatic and secret growth of thetumor, delayed onset of symptoms, and lack of proper screening that result in itsdiagnosis in the advanced stages (Badgwell & Bast, 2007 ; Yoneda et al., 2012)There are three forms of ovarian tumors,each originating from a different cell type; epithelial tumors (90%of cases), germ cell tumors (5% of cases), and stromal tumors (5% of cases) (Sumanasekera et al., 2018; Torre et al., 2018). Epithelial tumors are the most usually diagnosed OC in women (Goff et al., 2013; Humans 2004). The etiology of ovarian cancer is still unclear (Gharwan et al., 2015). multiple factors, such as genetic/ hereditary factors, high levels of estrogens, gonadotropins, exposure to a number of environmental toxicants can increase risk for ovarian cancer. Choosing healthy lifestyles such as diets rich in glutathione and other antioxidants, maintaining a healthy weight, and regular exercise may provide protective measures against ovarian cancer (Sumanasekera et al., 2018). It is believed that ovarian cancer is a multifactorial disease and it is a result of the interaction of hereditary, reproductive, hormonal, dietary factors and smoking (Hunn & Rodriguez , 2012).

Methods— This study was a case control study; it was conducted in Hiwa hospitalfor oncology in Sulaimani city. This study conducted from the 1st of June, 2019 to 1st of April 2020, involving 100 ovarian cancer patients and 100 female appeared normal without ovarian cancer as a controls. All subjects who agreed to participate signed a consent form, answered a data collection sheet about personal information as age, education, marital state ,education, economic status , physical activity and special habits especially exposure to passive smoking.

Results---The mean age of the examined subjects that ranged from 15 to 72 years old is 44.9 ± 13.9 and 37.9 ± 13.7 for both cases and control groups respectively, with a significant difference ($p< 0.001$) ,and most of the age of patients had ovarian cancer were between40-50 Years (29% vs. 19%) with high significant difference ($p = 0.004$), Figure 1, Table 1. Most cases were house wife 65% and 32% were illiterate with high significant difference ($p< 0.001$). 40 % of cases were Sufficient economic state which is less than control group were 69 % Sufficient economic state with high significant difference ($p< 0.001$). marital status $p=0.13$ and physical activity $p=0.06$ did not differ significantly between cases and controls.

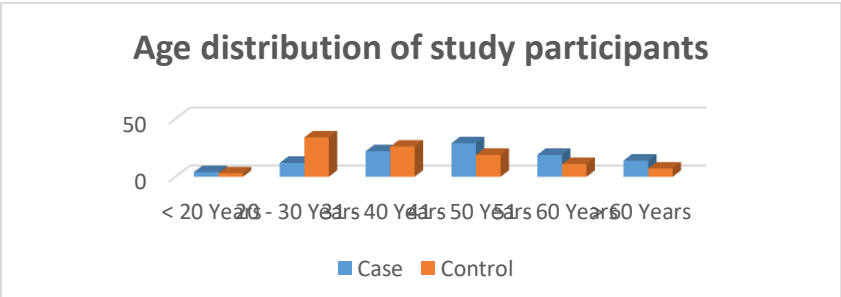

Figure 1: Distribution of age between cases and control

Table 1: Socio-demographics characteristics of cases and control groups.

Socio-demographics	Case	Control	P value
Age			
Mean ± SD	44.9 ± 13.9	37.9 ± 13.7	< 0.001
< 20 Years	4	3	0.004
20 - 29 Years	11	31	
30 - 39 Years	16	27	
40 - 49 Years	21	18	
50 - 59 Years	30	14	
≥ 60 Years	18	7	
Occupation			
House wife	65	37	< 0.001
Teacher	11	8	
Cleaner	6	0	
Employee	9	44	
Student	4	11	
Not working	1	0	
own work (seamstress)	1	0	
retired employee	3	0	
Economic status			
Sufficient	40	69	< 0.001
Barely sufficient	33	27	
Insufficient	27	4	
Educational level			
Illiterate	32	6	< 0.001
Read and write	7	11	
Primary	17	10	
Secondary	22	8	
Institute	17	16	
College	5	49	
Marital status			
Married	70	58	0.13
Divorced	3	3	
Never married	12	25	
Widow	15	14	
Physical activity			
Yes	6	14	0.06
No	94	86	

Table 2 shows that (5% , 3%)of women were active, (2%, 0%) quit, and (31%, 16%) passive smokers and the remaining(62%, 81%) were never smokers in case and control groups respectively . So passive women more prone to ovarian cancer with a significant difference p =0.02 Especially those with > 5 years passive smoker (87.1%) comparing with 5 years and less in cases group and compared to control groups p< 0.001 table 3.

Table 2: Distribution of smoking in both cases and control groups

Smoking	case (%)	Control (%)	
Never smoker	62	81	0.02
Passive smoker	31	16	
Active smoke	5	3	
Quit smoking	2	0	

Table 3 Duration (years) of passive smoker between cases and patient

Years of passive smoking	**Case**	**Control**	**P value**
< 1 year	2 (6.5%)	4(25%)	< 0.001
1 - 5 years	2(6.5%)	2(12.5%)	
> 5 years	27 (87%)	10(62.5%)	
Total	31	16	

This study revealed that passive smoking was associated with serous ovarian cancer(15.5%) then Mucinous(5.1%),Endometriod (3.4%), adult granulosa, Teratoma (2.9%)and Dysgerminoma(1.2%) ovarian cancer figure (2)

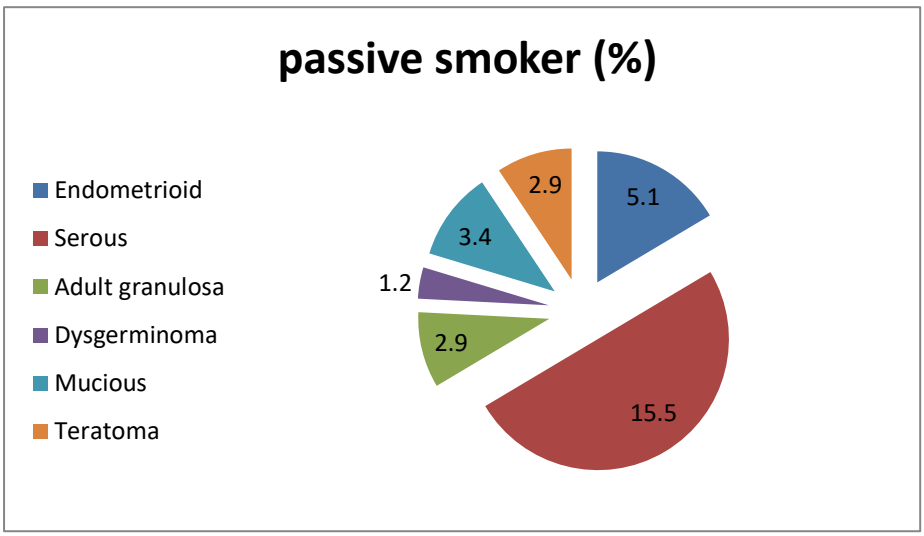

Figure 2: Relationship between Passive smoker and Type of ovarian cancer

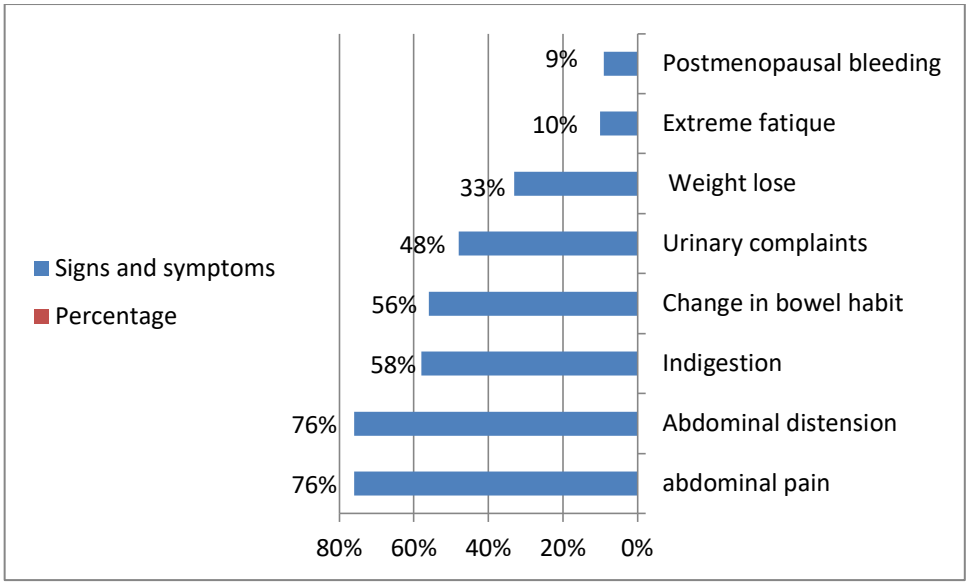

Figure 3 :Signs and symptoms among cases of ovarian cancer.

Majority of the patients complained from abdominal pain and abdominal distension (76%) as the first presenting symptom followed by Indigestion (58 %), Change in bowel habit (56%), urinary complaints (dysuria, retention ,frequency of micturition) (48%), weight lose (33%), Extreme fatigue (10%) and postmenopausal bleeding (9 %) .

Discussion

In this study, the mean age of Ovarian cancer woman was 44.9 ± 13.9and most of the age of patients had ovarian cancer were between 40-50 Years.

The epithelial ovarian cancer is an age-related disease, and is considered primarily a postmenopausal disease(Chornokuret al., 2013; Chan et al., 2006). Increased incidence of this cancer is more pronounced in women over 65 years of age(Mohammadian et al., 2012)According to previous studies, median age atdiagnosis is 50–79 years.(Chan et al., 2006; Arora et al.,2018; Zheng et al.,2018) The relationship between age and the outcome of ovarian cancer is uncertain. Although many researchers have pointed out that the younger age of ovarian cancer is associated with the improved outcome(Arora et al.,2018;, Chan et al., 2003; Chan et al., 2004), other stated age is not an independent prognostic factor(Chan et al., 2004).Older age in this disease is associated with more advanced disease and lower survival rate(Chan et al., 2006; Massi et al., 1996).Older women are treated less aggressively in contrast with younger ovarian cancer patients, and, thus, survival is lower in these group(Poole et al., 2013)An age of over 64 years is one of the predictors of mortality in people with ovarian cancer(Ørskov et al.,2016)

Most cases were house wife and illiterate with Barely Sufficientor insufficient economic state, because job strain may capture facets of psychosocial stress that affect health as demonstrated by consistent associations with cardiovascular disease risk and mortality among individuals mostly from the U.S. and Europe (Huang et al.,2015; Kivimaki & Kawachi, 2015), and because ovarian cancer seems susceptible to stress-related biological alterations, we hypothesized stress-related

house wife, low education, insufficient economic state characteristics would be associated with increased risk of incident ovarian cancer

Another variable in the life style characteristics is performing physical activity and the results of present study most patients were not performing any physical activity.

Physical activity may decrease risk of ovarian cancer by decreasing exposure to estrogen. Physical activity inhibits ovulation temporarily,. In addition, regular physical activity may lengthen ovulatory cycles, thereby decreasing lifetime exposure to endogenous estrogens. Physical activity also leads to decreased body fat, which may cause lower levels of extra glandular estrogen production, Moreover, increased physical activity may reduce chronic inflammation, which may play a role in the development of ovarian cancer (Lindsay et al., 2004)

the present study shows that most participant were never smokers in case and control groups then passive smoker ovarian cancer women were double the passive smoker control with significant difference, So passive women more prone to ovarian cancer, especially those with > 5 years passive smoker.Also passive smoking was associated with serous ovarian cancer more than Mucinous , Endometriod , adult granulosa, Teratoma and Dysgerminoma ovarian cancer .this result which in line with other studywhich conclude that Cigarette smoking may be associated with serous ovarian cancer among AA(Kelemen et al., 2017), which differs from associations reported among Caucasians(Faber et al., 2013).
In contrary to present study Literatures reported that passive smoking is associated with decreased risk of ovarian cancer among individuals with daily ETS (Environmental tobacco smoke) exposure. This effect may be due to the immunosuppressive effects of nicotine as well as the role of tobacco smoke as an up regulator of metabolism (Baker et al., 2006).

Chemicals in tobacco smoke are a mixed bag of directly genotoxic DNA damaging compounds (initiators), compounds that enhance the action of these initiators (promoters), and compounds that do both. Some of these substances are more abundant in side stream smoke, which comes off the tip of the cigarette, than the smoke inhaled by smokers themselves (McCarty et al., 2009).

This side stream smoke is a major source of secondhand smoke (SHS). Many studies have reported that toxicants from cigarette smoke can form the DNA adducts which is believed to represent the first step of carcinogenesis. Which, if not repaired or if repaired incorrectly, these modifications may lead to mutations and cancer (Jenkins et al., 2000).

This study revealed that majority of the patients complained from abdominal pain and abdominal distension as the first presenting symptom followed by Indigestion , Change in bowel habit , urinary complaints (dysuria, retention ,frequency of micturition) , weight lose , Extreme fatigue and postmenopausal bleeding , Similarly, (Khan &Sultana, 2010) showed that abdominal pain as the most common symptom followed by abdominal distension, urinary complaints, vaginal discharge, and postmenopausal bleeding. a study conducted in Nigeria (Odukogbe et al., 2004) stated abdominal distension to be the most common presenting feature with a higher proportion of patients presented with advanced stage disease which is similar to our study. Others also reported abdominal distension as a common feature in their study

(Gaughan et al., 2006; Petignat et al., 1997) .

(Khan & Sultana) no specific sign or symptom for early stage or for late stage disease In early as well as in late stage (Khan &Sultana, 2010).

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