Prevalence of cytological abnormality of cervical papanicolaou smear

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Abstract

Background: Cervical cancer is the 2nd leading cause of female death. Little is known about cervical cancer and intraepithelial abnormality prevalence in Iraq. This study aims to determine the prevalence of cervical intraepithelial abnormality and invasive cervical cancer among Iraqi women.

Patient and methods: A cross sectional study done in Al-Alwiyaa Maternity Teaching Hospital, Women cancer Center. Data was obtained from the patient records for the years from January 2016-July 2019; information regarding the age and cytology results of the Pap smear for each patient were taken. (2,182) patients were studied.

Results: Abnormal cervical Pap smear cytology was found among 1,926 (88.3%), Abnormal intraepithelial lesion was found among 508 (23.3%) of total patients; 6 (0.3%) patients had unsatisfactory smear. Negative for intraepithelial lesion and malignancy (NILM) was found among 1,418 (65%), ASCUS 245 (11.2%), LISL 221 (10.1%), HISL 32(1.5%), Squamous cell carcinoma 9 (0.4%), Adenocarcinoma 1 (0.04%). The mean age of patients with NILM was 39.4±10.9, ASCUS 40.5±10.8 , LISL 38.4±11.3, HISL 44.9±12.95, and squamous cell carcinoma 48±6.6.

Conclusion: Higher prevalence of cervical intraepithelial abnormality and invasive squamous cervical cancer was reported in this study than in the neighboring countries, giving a clue to the urgent need for a cervical cancer screening program.

Key words: Pap smear, cervical cancer, cervical intraepithelial abnormality, CIN

Introduction

Most of the burden of cervical cancer is found in developing countries. In Iraq the age standardized mortality rate is 1.3 per 100,000/per year and morbidity is 1.9 per 100,000. The number of susceptible females aged above 15 years in Iraq is 11.4 million, with age standardized incidence of cervical cancer.[1]

Cervical cancer is common in the 4th decade of women's life, and rarely found below 20 years.[2] Risk factors for cervical cancer are poor living conditions, lack of hygiene, early age of first intercourse, multiple sexual partners, and human papillomavirus (HPV) infections.[3]

Cervical cancer generally develops slowly over a period of 10-15 years. It is preceded by detectable and treatable precursor conditions in which certain cells in the cervix develop abnormal characteristics, but are not yet cancerous [4].Screening Pap test is done to ever-married Iraqi women 25-45 years age, having one or more of the following: History of inter-menstrual or post coital bleeding, personal or husband history of sexually transmitted infections (STI), early marriage and pregnancy or married more than once, abnormal vaginal discharge, history or presence of genital warts, continuous use of oral contraceptive pills for 3 or more years, women who smoke, grand multipara, low socioeconomic status and malnutrition. Testing can also be done to married women having no symptoms, but whose cervix is abnormal looking on examination [5].

The Bethesda System is a modern reporting system for cervical cytological Pap smear results, revised in 2001[6]. The Descriptive diagnoses are either Negative for intraepithelial lesion or malignancy (infection, reactive or atrophic changes), or Epithelial cell abnormalities (squamous or glandular cell abnormality), or others such as endometrial cells in postmenopausal women not on hormone replacement.

The squamous cell abnormalities include four types:

1- ASC (Atypical Squamous Cells): either of undetermined significance (ASC-US), or that cannot exclude high-grade squamous intraepithelial lesion (ASC-H).
2- LSIL (Low-grade squamous intraepithelial lesions): cells show definite minor changes unlikely to progress into cancer, including human papilloma virus (HPV) infection, mild dysplasia, and cervical intraepithelial neoplasia (CIN 1).
3- HSIL (High-grade squamous intraepithelial lesions): cell changes having higher likelihood of progressing to cancer, including presence of moderate to severe dysplasia, carcinoma in situ (CIS), CIN 2 and CIN 3, or changes suspicious for invasive cancer.
4- Squamous cell invasive cancer [6].

The Glandular cell abnormalities include three types:
The AGUS (Atypical glandular cells of undetermined significant borderline cell) between reactive changes to premalignant / malignant process, Adenocarcinoma in situ, and Adenocarcinoma [6].

This study aimed to determine the prevalence of cervical intraepithelial abnormality, and invasive cervical cancer among Iraqi women.

Materials and Methods

A cross sectional study done in Al-Alwiyaa Maternity Teaching Hospital, Women cancer Center.

Al-Alwiyaa Maternity Teaching Hospital, Women cancer Center, is one of the major cervical cancer early detection centers, and drain areas of the Al Rusafa part of Baghdad city, as well as some patients referred from the Salahaddin and Al Anbar governorates.

Data was obtained from the patient records for the years from January 2016-July 2019. Information regarding the age and cytology results of the Pap smear for each patient were taken.

Any record with deficient information, or without Pap Smear cytology results was excluded from the study.

No ethical concerns were present. All efforts were made to assure data confidentiality and the research publication is only for the purpose of improving services.

The center usually uses the conventional method of pap smear, using Ayre's spatula which was rotated five times in the clockwise direction, with the central longer bristles in the canal. All efforts were made to obtain quality samples around mid-cycle to ensure reliability of the test. The spatula with the sample was rapidly but lightly stroked, thinly and evenly across the surface of the slide and cytology spray fixatives were used without any delay. All slides were evaluated at the cytology laboratory of the hospital using light microscopy.= [7]. Smears were prepared by cytotechnologists and all slides were read by the consultant histopathologist. All reports gave the complete diagnosis despite some being non-uniform in pattern; with no specific classification scheme in the reporting of these smears.

Results

Analysis of (2,182) pap smear results was studied from the patient registries (Table 1).

Abnormal cervical pap smear cytology was found among 1,926 (88.3%), Abnormal intraepithelial lesion was found among 508 (23.3%) of total patients, 6 (0.3%) patient had unsatisfactory smear (Table 2).

Negative for intraepithelial lesion and malignancy (NILM) was found among 1,418 (65%), ASCUS 245 (11.2%), LISL 221 (10.1%), HISL 32 (1.5%), Squamous cell carcinoma 9 (0.4%), Adenocarcinoma 1 (0.04%), as shown in Table 3.

The mean age of patients with NILM was 39.4±10.9, ASCUS 40.5±10.8 , LISL 38.4±11.3, HISL 44.9±12.95, squamous cell carcinoma 48±6.6. This difference was statistically significant, as shown in Table 4.

Table 1: Number of patients by year

	Frequency	Percent
2016	527	24.2
2017	771	35.3
2018	657	30.1
2019 (Mid)	227	10.4
Total	2182	100.0

Table 2: Common findings in all the Pap smears

	Frequency	Percent
Normal	250	11.5
Abnormal	1926	88.3
NILM	1418	65.0
Abnormal intraepithelial lesion	508	23.3
Unsatisfactory	6	0.3
Total	2182	100.0

Table 3: The patient distribution according to the Pap smear cytology results and year of diagnosis

	Year of registration				
	2016.00	2017.00	2018.00	2019.00	Total
Normal	34	78	98	40	250
	6.5%	10.1%	14.9%	17.6%	11.5%
NILM	421	508	374	115	1418
	79.9%	65.9%	56.9%	50.7%	65.0%
ASCUS	21	83	110	31	245
	4.0%	10.8%	16.7%	13.7%	11.2%
LISL	46	82	55	38	221
	8.7%	10.6%	8.4%	16.7%	10.1%
HISL	3	15	12	2	32
	0.6%	1.9%	1.8%	0.9%	1.5%
Sq. cell ca.	1	1	6	1	9
	0.2%	0.1%	0.9%	0.4%	0.4%
Adenocarcinoma	1	0	0	0	1
	0.2%	0.0%	0.0%	0.0%	0.04%
Unsatisfactory	0	4	2	0	6
	0.0%	0.5%	0.3%	0.0%	0.3%
Total	527	771	657	227	2182
	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4 The mean age of the patient according to cytological results

	N	Mean	Std. Deviation	Minimum	Maximum
Normal	240	40.99	11.9	18.00	84.00
NLM	1418	39.4	10.9	17.00	82.00
ASCUS	244	40.5	10.8	17.00	80.00
LISL	219	38.4	11.3	18.00	77.00
HISL	32	44.9	12.95	18.00	67.00
Sq. cell ca.	9	48.0000	6.6	43.00	63.00
Adenocarcinoma	1	55.0000	.	55.00	55.00
Unsatisfactory	6	45.0000	11.36662	32.00	63.00
Total	2169	39.7570	11.10888	17.00	84.00

ANOVA test F=3.6, df=7, P value= <0.001

Discussion

It is accepted that invasive cervical cancer is considered as a preventable disease as it is preceded by effectively treatable, long standing pre-neoplastic and pre-invasive states (8-10).

Therefore, its prevention depends on early diagnosis and treatment of these pre-invasive lesions.

Negative for intraepithelial lesion or malignancy (NILM) was found among (65%). This was supported by previous studies done in Iraq; Barzanjy B K et al (11) (88.4%), Mezaal MI,(12) (31.1%).

In Saudi Arabia Magdy Hassan Balaha et al(13) found (48.3%) NILM.

Abnormal intraepithelial lesion was found among 508 (23.3%) of total patients. This percentage resembles what was found previously by Abdulraheem A F, and Khudhairi J M(14) 2014 in Baghdad, HSIL (20%), squamous carcinoma (1%), and with Abdulla K N et al (15) 2016 which found HSIL(29%), and LSIL (48%) among patients with unhealthy cervix attending a gynecology clinic.

But these figures were higher than that found by Barzanjy B K et al(11) (11.3%) and invasive carcinoma (0.1%) and Al-Rubaiee et al 2006(16), who found (3.6%) of the sample was HSIL, and LSIL (33.7%).and that found in Saudi Arabia (4.95%) (13).

The figure in Iraq is higher than in China (3.12%)(17), in Belgium (3.7%)(18) and found in India (5.64%) (19).

The prevalence of HSIL is a precancerous cervical cytology and was (1.5%). This was in line with the literature done in Belgium (18) which was (1.1%). It is higher than in China(17) (0.41%), and India(19) (0.34%). It is lower than found in North of Iraq by Barzanjy B K et al(11) (2.1%), Abdulraheem A F, Al-Rubaiee et al 2006(16) (3.6%),and Khudhairi J M(14) in 2014 in Baghdad (20%).

Invasive squamous cell carcinoma was (0.4%) which is equal to that found in Belgium (0.4%)(18), and in India(19) (0.41%). This figure was higher than Barzanjy B K et al(11) (0.1%), in China(17) (0.02%), Kuwait(20) (0.02%), and in Turkey (0.08%)(21).

The high figure of abnormal intraepithelial lesions, is due to the fact that there is no cancer screening program(22), and the cervical clinic receives patients with significant complaints referred by the gynecologist, for pap smear for diagnosis. From another viewpoint maybe it is a marker of increasing cervical abnormalities in the last years as many socioeconomic and cultural factors, and destruction of health infrastructure that has been faced by the country. This high figure is an alerting sign for the future increasing cervical cancer rates if this problem is not taken seriously. The invasive squamous cell carcinoma was higher than found in China, Kuwait, and Turkey, and may be due to their presence of a good health care system and cervical cancer screening program, which reduces the cervical cancer rates.

The mean age of women with invasive squamous cell carcinoma was 48±6.6. This goes along with a study done in neighboring and other developing countries (13,20,23,24), and goes with the fact that most cervical cancer in the developing countries is diagnosed in the mid-forties or fifties of women's age, though some women are diagnosed much earlier (25,26).

In the USA it is diagnosed at an earlier age and commonly at (25-34) years, and decreased among women aged over 34 years due to implementation of a cervical cancer screening program(27). Early age of diagnosis was associated with early age at first intercourse, though the

effect appeared to be modified by number of sex partners before age 20. And the change in age at marriage and many socio-cultural, and sexual habits during the last decades of multiple wars and conflicts may have a finger print.

The higher rate of invasive squamous cancer in Iraq indicates the necessity of implementation of an effective cervical cancer screening program in Iraq.

Conclusion

Higher prevalence of cervical intraepithelial abnormality and invasive squamous cervical cancer, was reported in this study more than the neighboring countries, giving a clue to the urgent need for a cervical cancer screening program.

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