Original paper

Significance of Bethesda System in Reporting of Cervical Intraepithelial Lesions and the Most Common Cytological Findings.

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Abstract

Background: Cancer of the cervix uteri remains fourth most common cancer and a significant cause of women mortality in many developed countries; the incidence of cervical cancer was comparatively low in Iraq like most Muslim countries. The Bethesda System goes back almost 3 decades and it is the latest and the more recent medical terminology system with aim to standardize the cervical cytology report.

Objective: Is to emphasize the role of cervical cytopathology smear in the detection of various cervical intraepithelial lesions that may predispose to cancer and to evaluate The Bethesda System in reporting these lesions.

Patients & methods: This retrospective study was carried out in Al-Yarmouk, Baghdad medical city teaching laboratories, and Karbala gynecology hospital Lab on 91 women aged 25 & above, for the period from June 2016 to March 2017, all were married, non-pregnant, the cervical smears of these women were stained by the Pap technique and reevaluated, reassessed using The Bethesda System (TBS).

Result: According to The Bethesda System the cytological findings of epithelial cells abnormalities revealed: (5.9%) of cases. Minimal cervical smear abnormalities were the high grade squamous intraepithelial lesions (3.3%), Atypical squamous cells, as a single entity was representing (47.1% of abnormal cervical smears, 26.4 % of total group study). While low grade squamous intraepithelial lesions & atypical glandular cells represented (43.1%), (3.9%) of abnormal cervical smears respectively.

Conclusion: Pap smear or cervical smear is a simple, easy test and well-established efficiency. The Bethesda System is of validity in providing a uniform formula for cervicovaginal cytopathology report & it reflects important advances in biological understanding of cervical neoplasia & cervical screening technology.

Keywords: Pap smear, cervical cytology, Minimal cervical smear abnormalities, HGSIL, LGSIL & Percent of Clinical Presentation.

Introduction

Cancer of the cervix uteri remains a significant cause of mortality from malignancy in women;(1) Cervical cancer is the fourth most common cancer in women, and the seventh overall, with an estimated 528,000 new cases in 2012(1) In excess of 85% of the worldwide burden occurs in developing countries, where it is responsible for 13%of all female cancers (1)

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The incidence of cervical cancer is comparatively low in Iraq as in most Muslim countries [2] . According to the Iraqi Cancer Registry records, cervical cancer ranks beyond the 10th most common female cancers [3], , in 2009 146 case diagnosed in Iraq with about 0.96% of total cancer cases recorded [3]. Preinvasive & early stages of invasive lesions of the cervix can be detected by cervical smear in their preclinical course, a fact which documents the significant role of cervical smears in gynecological practice [4]. The availability of Pap smear has been largely responsible for reducing the annual death rate from cervical cancer by about 70% [4,5] .The Bethesda System is the latest and the more recent medical terminology system aim to simplify cervical smear reporting and make it more reproducible and facilitates the communication between pathologist and gynecologist [6] .Accordingto the 2014 Bethesda System**,** it is recommended that a cervical smear report address each of the following elements [6,7]: A- A specimen type. B- A specimen adequacy; C- A general categorization of result. D- Interpretation/ result.
E- Adjunctive testing.
F- Computer –assisted interpretation of cervical cytology.
H- Educational notes and comments appended to cytology reports.

Patients & methods

This retrospective study was carried out on 91 women aged 25 & above, all were married, non-pregnant, the cervical smears of these women were taken from the cytopathology lab in Bagdad medical city, Al- Yarmouk Teaching Lab and Karbala gynecology hospitalLab for the period from June 2016 to March 2017 .The smears stained by the Pap technique were reevaluated, and reassessed using The Bethesda System 2014 (TBS) with special emphasis on cases with cervical intraepithelial lesions and exclusion of cases which were unsatisfactory for evaluation or negative for intraepithelial lesion or malignancy. All results were recorded & statistically analyzed.

Results

According to The Bethesda System: the cytological findings of epithelial cells abnormalities were as follows:
-Minimal cervical smear abnormalities (ASC+ AGC + LGSIL) were more common than HGSIL (Fig.1), the latter represented (5.9%) of total group studied (3.3%) of abnormal smears.
- Atypical squamous cells, as a single entity was the most common epithelial abnormality representing (47.1% of abnormal cervical smears, 26.4 % of total group study).
Atypical squamous cells as asingle entity (ASCUS and ASC-H) was the most common epithelial abnormality representing (47.1% of abnormal cervical smears, 26.4 % of total group study).
While low grade squamous intraepithelial lesions (LGSIL) & atypical glandular cells (AGC) represented (43.1%), (3.9%) of abnormal cervical smears respectively (table1).

- It has been shown that the real age of patients in this study who had precancerous lesions had their age raging from (40- 59) years (table 2).
- History of vaginal discharge (VD) or abnormal vaginal bleeding [inter menstrual bleeding (IMB), post coital bleeding (PCB), post-menopausal bleeding (PMB) showed no obvious significant correlation with the risk of harboring cervical intraepithelial lesions or squamous intraepithelial lesion of any grade (table 3).

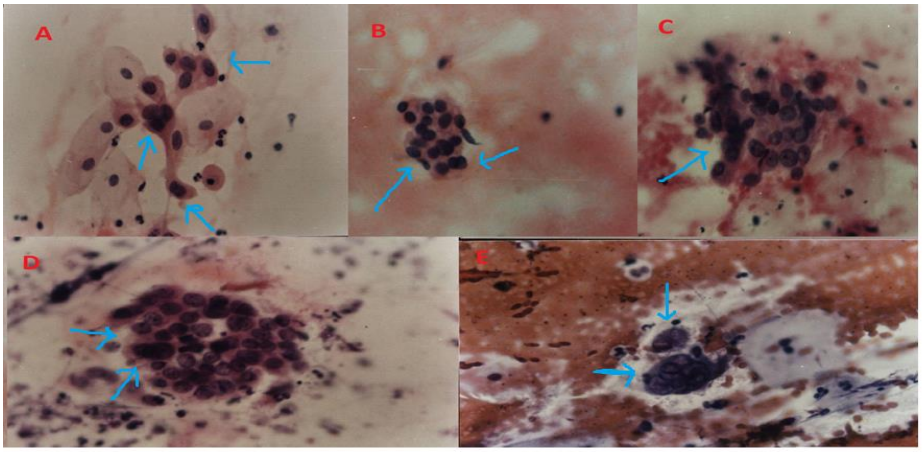

Fig 1. Cervical smear shows (arrow) X400: A- (ASC-US). There is nuclear enlargement with regular nuclear outline without significant hyperchromasia .B.(LSILor CIN1) There is nuclear enlargement with pyknosis& wrinkling of nuclear contours with cytoplasmic orangophilia,C- (HGSIL) or (CIN2-3). There is increase in nuclear/ cytoplasmic ratio, hyperchromasia, irregularity in the nuclear outline & chromatin distribution, D- (AGC). There is nuclear enlargement with overlapping & mild coarse chromatin, slight hyperchromasia, clumping are shown, E-Herpes simplexviral infection;there is multinucleation and nuclear molding.

Table 1. Cytological Categorization of the Total Study Group of (91) Patients

Cytological Interpretation		**Number**	**% of TG* (91 cases)**	**% of AS** (51 cases)**
Negative cervical smears		36	39.6%	
Unsatisfactory for Evaluation		4	4.4%	
Minimal cervical smear Abnormality	ASC	24	26.4%	47.1%
	AGC	2	2.2%	3.9%
	LGSIL	22	24.2%	43.1%
HGSIL		3	3.3%	5.9%
Total		91	100%	100%

*Total group study** Abnormal smears

Table 2. Mean Age for Patients with Abnormal Cervical Smears

Cytological interpretation		**Mean Age (years)**
Minimal cervical abnormalities	**ASC**	41.5
	AGC	41.7
	LGSIL	46.7
HGSIL		51.3
SIL		47.3

Table 3. shows the Frequency and Percent of Clinical Presentation for AS Patients (total 51)

	Cytological Interpretation								
Clinical Features	**ASC**		**AGC**		**LGSIL**		**HGSIL**		
	No	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**P Value**
VD	9	17.6	0	0.0	4	7.8	1	2.0	**0.39 (NS)**
IMB	9	17.6	2	3.9	9	17.6	0	0.0	**0.16 (NS)**
PMB	4	7.8	0	0.0	8	15.7	2	3.9	**0.14 (NS)**
PCB	2	3.9	0	0.0	1	2.0	0	0.0	**0.88 (NS)**
P Value	**0.25 (NS)**		**0.35 (NS)**		**0.48 (NS)**		**0.35 (NS)**		

Discussion

Cytological screening continues to be an effective tool for detecting cervical neoplasia in a precancerous stage due to the long natural history of progression from low- grade neoplasia to invasion [5,8]. Although the incidence rates of cervical cancer in Iraq is relatively low, as in most other Islamic countries, the majority of the cases usually present in advanced stages with poor prospects of cure [5, 9]. In this study **minor cytological abnormalities** is much more common than HGSIL (94.1% compared to 3.3% of abnormal smears), it includes:

ASC: as a single entity, was the most common cytological abnormality (24 case, 47.1% of abnormal smears,) and it is nearly similar to other studies in Iraq [8, 9, 10].

AGC: represented (3.9% of abnormal smears), this was relatively lower than that reported by other studies in Iraq [8, 9]. However, our results were higher than Burja*et al* (1999) [11]. AGC is relatively uncommon cytological interpretation, occurring in approximately 0.18 to 0.74% of cervical smears in screening programs, & representing about 4% of the abnormal cytological findings [12], which is the same as our results. **LGSIL**: represented (43.1% of abnormal smears) in this study & it includes CIN1 & koilocytoticatypia. Other studies from Iraq reported similar rates [8, 9]. However, they are lower than Margolis *et al* (1999) & other study due to the lower frequency of HPV in the eastern population [8, 9, 13, 14].

HGSIL In cytological smears represented (5.9% of abnormal smears) which agrees with other studies in Iraq & adjacent countries [2, 8, 9, 15]. Higher percentages were reported by other studies as Wertlake (1999)**,** [16] so this & most of other western studies were higher than this study reflecting the difference in the incidence of cervical cancer in our society compared with the western society due to the widespread difference in the prevalence of risk factors, different sexual habits, & probably the availability of screening programs [2, 17]. In this study, the mean age for patients with abnormal cervical smears was 43.2 year & the mean age for patients with SIL was 47.3 year. The results of our study showed that the incidence of SIL is higher in patients with old age group, so the risk of having SIL especially the LGSIL was higher in women aged 40 years & more compared to the age of 50 year & more for women with HGSIL**.** So there is slightly higher age incidence of HGSIL in this study than other Iraqi studies & this may be related to the study design & low number of cases. [8, 9, 18]. In this study there was no statistically difference found in the incidence of abnormal cervical smears between patients regarding the clinical features (vaginal discharge, abnormal vaginal bleeding). Regarding SIL, it has been repeated in many literatures that SIL is usually free from symptoms & that the condition owes its existence as an entity only to assign: "the presence of abnormal smear" [19, 20].

Conclusion

Pap smear or cervical smear is a simple, easy test, which can be helpful in the detection of many precancerous intraepithelial cervical lesions and its efficiency in screening for cervical cancer is well established all over the world. The Bethesda System is of validity in providing a uniform formula for cervicovaginal cytopathology report & it reflects important advances in biological understanding of cervical neoplasia & cervical screening technology.

Recommendations

1-Designing & conducting cervical cancer screening programs in our country, & these programs based on cervical smear cytology, using HPV DNA testing & colposcopy, especially in sexually active young women with history of sexually transmitted disease.

2- Adoption of The Bethesda System, in reporting cervical cytopathology report, which facilitates correlation between pathologist & gynecologist, specially, this system was adopted in other parts of the world & even in the adjacent countries before many years.

3- It is necessary to increase the efficacy of the screening programs by adoption of the new technologies in this field to improve the quality of Pap smear preparations & performance, & these are:

a. Using automated screening systems.

b. Using fluid based monolayer technology, to optimize the collection & preparation of cells.

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