



STUDY ON HISTOLOGICAL OBSERVATION OF CERVICAL EROSION IN WOMEN OF LOW SOCIOECONOMIC GROUP IN BIHAR

Anatomy

Ravish Kumar Tutor, Deptt of Anatomy NMCH, PATNA.

Prabhat Kumar* Tutor, Deptt of Anatomy NMCH, PATNA. *Corresponding Author

Subodh Kumar Assistant prof, Deptt of Anatomy NMCH, PATNA.

ABSTRACT

Background: The objective of this study was observation of low socioeconomic women with cervical erosion

Objectives : The objectives of this study were to determine the prevalence and role of socioeconomic factors in cervical erosion and also the cytological findings in reproductive age group women.

KEYWORDS

cervical erosion, hyperplasia low socioeconomic.

INTRODUCTION

The health of women in society is neither a new issue nor a fully settled one. Infact, the origin of female disadvantages lies in the discriminatory treatment towards women in the allocation of life-saving resources such as food and health care (Latthe *et al.*, 2006).

Gynecological health is an important component of any women's health status. Social factors play a vital role for the occurrence of certain gynecological diseases (Garcia-Moreno and Turmen, 1995).

In India, women of the child bearing age (15-44) constitute 19% of the total population. Gynecological health is an important component of any women's health status. Social factors play a vital role for the occurrence of certain gynecological diseases. Hence, a study of these factors, influence in the causation of disease would be crucial for the prevention of various gynecological problems.

Hence, a study of these factors, influence in the causation of disease would be crucial for the prevention of various gynecological problems.

Cervical erosion is a common finding on routine pelvic examination during the fertile years. It is a true epithelial defect that can be produced by trauma, inflammation or by carcinoma. Jeffcoate (1987) states that cervical erosion, now-a-days also known as cervical ectopy is the condition in which squamous epithelial layer of vaginal cervix is replaced by columnar epithelium which is continuous with that lining the endo-cervix.

(Watchel *et al.* 1969) further mentioned that cervical erosion gives rise to chronic cervicitis or chronic cervicitis gives rise to cervical erosion is still controversial. The epithelial cells responding to infection and inflammation may show two types of behavior. Many of them show evidence of degenerative changes and cell death. At the same time others may show hyperplastic reactive response.

Robbins has concluded that squamous and columnar cells show evidence of nuclear activity. Nuclei while retaining their smooth rounded shape show enlargement and multinucleolation. There is an increase in the coarseness of chromatin pattern but despite these active nuclei the cells of a group retain their uniformity. Thus an abnormal increase in the number of normal cells in normal arrangement increases the volume of cervix.

Botton (1960) stated that difference between benign and neoplastic erosion can only be possible by histological examination.

The incidence of cervical erosion and incidence of cervical hyperplasia and carcinoma have been extensively observed and diagnosed separately since mid-70's by different workers like Bechholed and Richner [1961], Waslay *et al* [1966], Schmitz and Farrev *et al.* (1966), Lerch *et al.* (1968), Wahi *et al.* (1969), Mali *et al.* (1969), but the correlation between the two specially amongst low socio-economic women has been poorly worked out. Taking advantage of these lapses we have undertaken the present observation to explore new values for the betterment of suffering individuals.

The women of Darbhanga are different in culture and life-style. They do not have any inhibition in having sex. Because of the low socio-economic status they lack medical education and health awareness. As a consequence the low socio-economic group of women in Patna may be prone to cervical lesion.

AIMS & OBJECTIVE

The present work has been undertaken to have a better concept about the correlation between cervical erosion, cervical hyperplasia and cervical carcinoma for prevention, early diagnosis and better prognosis in patients from low socio-economic class of women Patna.

MATERIAL AND METHOD

The study on Histological Observation on Cervical Erosion and Hyperplasia in Low Socio-economic group of tribal women of Bihar State was conducted in the department of anatomy at nalanda medical college and hospital patna, with a close rapport with the department of Obstetrics and Gynaecology and department of Pathology nalanda medical college and hospital, Patna.

Material

The principal material for this study on uterine cervix comprised of Biopsy of cervix which were taken out from these patients who presented with symptomatic erosion.

Besides above tissue samples, materials and reagents, for preparing paraffin sections and for staining of those sections were also required viz.

1. Microtome, 2. Paraffin wax, 3. Oven, 4. 10% formalin 5. Alcohol solution of different concentration 6. Methyl Nenzoate 7. Benzene, L-Blocks, Glass slides, cover slip, 9. DPx – fluid, 10. H.E. Stain

Section of Cases

Only those tribal women were included for study who belonged to low socio-economic strata of Bihar. These patients reported to outpatient Department of Obstetrics & Gynecology in NMCH Patna. with the Chief complaint of vaginal discharge, pain abdomen and backache or irregular bleeding. Two hundred such cases were selected.

Methodology

After taking complete history of the patient, full pelvic examination i.e per speculum & per vagina was done which reveals a raw red & inflamed area of cervix.

Pap smear to rule out malignancy Colposcopy reveals an area of raw, stripped squamous epithelium

Biopsy of cervical tissue. After demarcating the affected area cervical tissue was taken out by the following methods:-

- (i) Multiple quadrant – biopsy by punch forcep
- (ii) Wedge biopsy
- (iii) Endocervical curettage
- (iv) Cone biopsy – specially when hysterectomy was done.

Tissue was taken out in the operation theatre.

1. Fixation

Preparation of fixative – 10 percent formaldehyde (neutral)

The commercially available solution contains 35-40 per cent gas, weight. Formaldehyde is commonly used as a 4 per cent solution, giving 10 per cent formalin for tissue fixation. 100 cc of 40 per cent formaldehyde was mixed with 900 cc of distilled water giving 1 litre of 10 per cent formalin. This was neutralized by adding Magnesium carbonate.

Tissue was taken kept in 10% formalin for fixation of the tissue. The time taken by the fixative to penetrate the tissue depends upon the depth of the tissue. Medawar (1941) found that depth (d) penetrated was proportional to the square root of time (t), which may be written as:

$$D = K\sqrt{t}$$

The tissue was left in 10% formalin for 24 hrs. at room temperature.

Care was taken to avoid prolonged fixation as it could give rise to secondary shrinkage.

2. Tissue Processing:

After the fixation of the tissue trimming was done to make them of the size of 3-4 mm. thickness in general and maximum of six mm. thickness.

After the tissue was fixed and trimmed it was passed through ascending concentration of alcohol for gradual dehydration, for the period as given below:-

Reagent	Changes	Duration
30% alcohol	1 st change	12 hrs.
	2 nd change	12 hrs.
50% alcohol	1 st change	12 hrs.
	2 nd change	12 hrs.
70% alcohol	1 st change	12 hrs.
	2 nd change	12 hrs.
90% alcohol	1 st change	12 hrs.
	2 nd change	12 hrs.
Absolute alcohol	1 st change	12 hrs.
	2 nd change	12 hrs.

After the gradual dehydration clearing was done to replace the alcohol in the dehydrated tissue before embedding in paraffin. Reagent used for this purpose was Methyl Benzoate, as it is miscible in both alcohol (dehydrating agent) and paraffin was (embedding agent). Since methyl benzoate has the same refractive index as that of protein, after completion of clearing agent till it became translucent. Tissue was kept in the clearing agent till it became translucent. It took around 12 hrs. After that 2 changes each one of one hrs. was given in Benzene.

Wax impregnation was done to remove the clearing agent from the tissue and impregnate them with a solid medium to facilitate the production of section. At first specimen was kept in the molten mixture of Xylene and paraffin wax (in ratio of 1:1) for 45 minutes in the oven at 62°C. During the process the tissue absorbed wax and became suitable to facilitate the sectioning. After wards following procedure was adopted:

- Molten wax was filtered with the help of whatmen's filter paper no. 1.
- A glazed porcelain plate which was used as base was lightly smeared with glycerin.
- Leuckhart. L-brass moulds were also smeared with glycerin on the surface which was to remain in the contact of wax during the process.
- Then the brass moulds were kept in position, and it was filled with fresh and filtered molten paraffin wax to a depth more than adequate to cover the thickness tissue block.
- After a thin film of semi-solid wax was formed on the base of the mould, with warm smoothed tip forceps the specimen was hold, immersed and gently pressed in the semi-solid wax in the mould taking care that it's cutting surface should face downward towards the base of the mould.
- After the formation of skin of wax completely over the surface of block, its solidification was hastened by immersing the whole porcelain plate with block in water. The purpose of this was to enable quick solidification to commence without delay and to reduce the tendency to large crystal formation in the wax which is result of delayed solidification.

- After complete solidification on the block, it was separated from the mould.

Block was fixed on block holder as follows:-

- The plate of block holder and under surface of block both were heated separately.
- Paraffin block was placed into position of block holder exerting gentle pressure and edges sealed with the help of spatula.
- It was then allowed to set hard by keeping under tap water.

1. Ribbon Making (Section cutting)

The knife used was of wedge type. Before sharpening the knife was examined under a stereodissecting microscope with the knife in both horizontal and vertical position. Any gross irregularity in the edge should be visible in horizontal position, while in the vertical position any rounding of the edge is seen as a ribbon of reflected light.

Precautions was taken that blade overhanging the plate was supported to prevent damage against the plate edge.

Fitting the Block Holder & Knife fixation:

- Protective cover of microtome was opened up, so that the mechanism became exposed.
- Ball point – holder carrier was fixed in the top position by means of simple locking device, situated near the top of machine.
- Block holder was inserted and was clamped tightly by means of screws.
- While placing the knife in position the clearance angle of 3-4 degree was maintained and the angle of slope was set permanently at 90 degree. Knife clam screwed tightly. Cutting angle was kept at 17-23 degree.

Precaution was taken that the exposed ends of the knife was at all times be protected by magnetic or clip-on-knife guards.

The ribbons of sections were immediately floated on to the water bath by keeping the trailing end of the ribbon in contact with water first and slight drag was produced when the ribbon in contact with water first and slight drag was produced when the ribbon touched the water surface to produced tension in ribbon to remove folds from the section. To obtain correct orientation shiny surface was kept towards the water.

Mounting: In the meantime the drop of albumin (which was obtained by filtering the egg white of a hen's fresh egg) was put on the slide and spread to make a thin film over it. Picking up the section on albuminized slide was achieved by emerging the slide vertically in the water bath to ¾ of its length and maneuvering the section into contact with slide. Sections were correctly positioned and the slide kept into the vertical position for few minutes for draining extra water. Alternatively blotting paper was used to remove extra water when only one section was kept on the slide. Afterwards section on this albuminized slide was kept in the incubator for 24 hours at 37°C Celsius for drying.

Staining

Sections were deparaffinated by immersing it in xylene. Two changes in xylene was given for two minutes each.

They were then gradually rehydrated by immersing them in alcohol of descending order of concentration for the period to time shown against them –

Reagent	Changes	Duration
Absolute alcohol	1 st change	2 minutes
	2 nd change	2 minutes
90% alcohol	1 st change	2 minutes
	2 nd change	2 minutes
70% alcohol	1 st change	2 minutes
	2 nd change	2 minutes
30% alcohol	1 st change	2 minutes
	2 nd change	2 minutes

The further procedure of staining is as follows:-

- Tissue specimen was put in Haemotoxylin for 5 to 7 minutes, washed in tap water and differentiated in 0.5% Hcl in distilled water.
- Washed in running tap water for 5 minutes.
- Stained for 30 seconds in alcoholic solution for eosin (1% in 70% alcohol).

- iv. Rinsed rapidly in 90% alcohol.
- v. Cleared in xylene by two changes of minutes each and mounted in D.P.X.

OBSERVATION

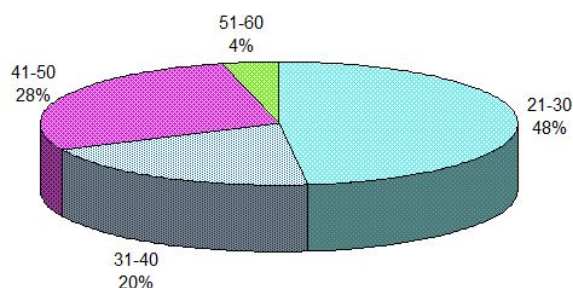
The study comprised of histological observation on cervical erosion and hyperplasia in low socioeconomic group of Patna in Bihar state.

The experimental group consisted of 200 patients who attended gynaecological out patient department Nalanda medical college and hospital, Patna with various complaints but were clinically diagnosed as having cervical erosion.

Biopsy material was taken and stained by Haematoxylin & eosin stain. The result were obtained and presented in tabular form.

TABLE-1 Showing distribution of patients according to Age group

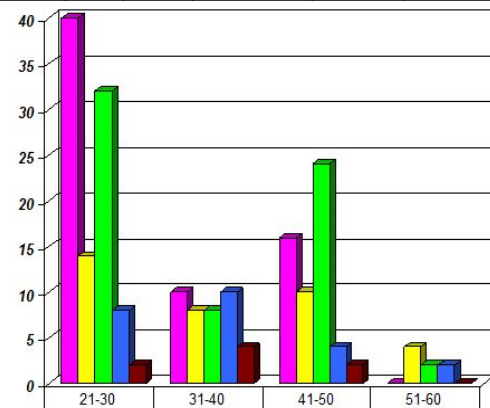
Age in years	No of patients	Percentage
21-30	96	48
31-40	40	20
41-50	56	28
51-60	8	4
Total	200	100



200 cases were studied out of which majority 48% patients were in the age group of 21-30 yrs.; 20% patients were in the age group of 31-40 yrs. 28% patients were in age group of 41-50 yrs. and only 4% patient were in the age group of 51-60 yrs. No patients above the age of 60 years were found as clinically having erosion. So this age group is not included in the study.

TABLE -2

Age group in yrs	Cervi-citis	Hype-rplasia	Cervicitis & hyper-plasia	Dyspl-asia/ CIN	Invasive carcinoma	total
21-30	40	14	32	8	2	96
31-40	10	8	8	10	4	40
41-50	16	10	24	4	2	56
51-60	0	4	2	2	0	8
Total	66	36	66	24	8	200



Out of 200 patients 20% cases showed cervicitis in age group of 21 to 30 years. while 16% case showed both cervicitis and hyperplasia in the age group of 21-30 yrs. and 12 cases showed both cervicitis and hyperplasia in age group of 41-50 yrs.

It is evident from the table that model age group is 21-30yrs. after which all the disease frequencies are getting reduced.

TABLE -3 : Showing distribution of Histological observations according to age of marriage

Histological Observation	Nullipa-rous	Parous					Total
		Unipa-rous	Bipar-ous	Tripar-ous	Multipa-rous Parity >3	Total	
Cervicitis	10	10	14	16	16	56	66
Hyperplasia	4	8	6	8	10	32	36
Cervicitis & hyperplasia	6	12	14	16	18	60	66
Dysplasia /CIN	4	6	4	4	6	20	24
Invasive carcinoma	2	0	2	4	0	6	8
Total	26	36	40	48	50	174	200

The table shows that out of 200 cases 50% are having done the age of marriage between 16-20 yrs. 34% got married between 21-25yrs; 8% were married at the age of 26-30 yrs. 2% were unmarried and 2% were married after the age of 26yrs. So this table indicates that early marriage particularly below 20yrs. make the women very much vulnerable for the development of different cervical lesion

TABLE-4 Showing distribution of cases according to Parity

Age group in yrs	Cervi-citis	Hyper-plasia	Cervicitis & hyper-plasia	Dyspl-asia/ CIN	Invasive carcinoma	Total
unmarried	4	0	0	0	0	4
10-15 yrs	4	2	0	2	0	8
16-20	28	24	36	10	2	100
21-25 yrs	20	8	28	6	6	68
26-30 yrs	8	2	2	4	0	16
>30 yrs	2	0	0	2	0	4
Total	66	36	66	24	8	200

The table is showing that out of 200 cases only 13% cases are nulliparous and 87% are parous, while 24-25% cases are para 3 and above. Thus maximum incidence of different cervical lesion is found in case of multiparity.

DISCUSSION

In our series of 200 cases we studied the histological observation on cervical erosion and hyperplasia in low socio economic group of Patna .

Our work was done in the department of Anatomy with close rapport with the department of Obstetrics and Gynecology in NMCH, Patna.

Many workers (Table I to IV) had carried out their work on these topics throughout the world but none of them had their work on the population of PATNA.

Hertig & Young (1952), Peckham (1954), Galvin (1955), Regan (1955), Young (1957), Rawson and Knoblich (1957), McKay (1959), Tweedate & Duilien (1972), Shah (1980), Ewan (1981), Garud (1981), Bertini (1982), Nasiel (1983), Bamford (1983), and Chauhan (1987) and others have their observation on same aspect of this topic, moreover most of them are Western worker with their field of work in different habit, habitat and socio economic condition quite different from that of Patna. More over none of them had classified age group as we have done (Table I).

Taking these factors under consideration our work is maiden.

In our series of work in age group of 21-30 yrs, which comprise 48% of cases, we observed 20% cases of Cervicitis, 7% with hyperplasia, 16% with cervicitis and hyperplasia, 4% with dysplasia and 1% with invasive carcinoma. In age group of 31-40 yr, out of 20% of cases there was 5% cervicitis, 4% hyperplasia, 4% cervicitis and hyperplasia, 5% dysplasia and 2% of invasive carcinoma. In age group 41-50 yrs, there was 8% cervicitis, 5% hyperplasia, 12% cervicitis and hyperplasia, 2% dysplasia and 1% of invasive carcinoma. In age group 51-60 yrs, there was no incidence of cervicitis, 2% of hyperplasia, 1% cervicitis and hyperplasia, 1% dysplasia and no incidence of invasive carcinoma (Table-II).

Watchet el (1969) had their observation on inflammatory condition

of cervix with no mention of percentage of cases and of age group. Bechhold et al (1969), Peyton (1963), Figge et al (1967), and Maili et al (1969) had their finding on atypical hyperplasia in erosion with no mention of percentage of cases and of age group. Schimiltz et al (1948) & Waslay et al (1963) worked on inflammation and erosion of cervix in which Schimiltz et al (1948) found the incidence of Metaplasia as 19% and Wasley et al (1948) found the incidence of Metaplasia as 19% and Dikshit & worker et al (1971) has failed to mention the percentage of cases and age group. 2-3% cases of erosion showed dysplasia as observed by McKay et al (1959) but he also failed to mention the age group. Moghissi et al (1968) found 15.1% Wahi et al (1969) found 3.1%, Rao et al (1973) found it as 8.8%, Chandra et al (1971) found it to be as 64.26%, Graud et al (1981) found 87 cases of dysplasia out of 7988 cases of erosion. Rajan et al (1973) found 728 cases of dysplasia per 1000, Mishra et al (1979) found 19%, Upreti et al (1981) found 18.52%, Chakravorty et al (1976) found 55.9% of mild dysplasia, 30.1% as moderate dysplasia and 14% as severe dysplasia. Domadia et al (1974) found 26.2% of dysplasia in erosion but has acutely failed to mention the age group as we have done. Haul and Walton et al (1968) worked on the subject but failed to mention the percentage of cases and age group.

In our series we have taken consideration over marital status of the patient in which we found that in unmarried group the incidence of cervicitis was 2% with no incidence of hyperplasia, cervicitis and hyperplasia, dysplasia or invasive carcinoma. In married status, in group of 10-15 yrs of the age of marriage there was occurrence of 2% of cervicitis, 1% of hyperplasia and 1% of dysplasia with no incidence of cervicitis with hyperplasia and invasive carcinoma. In 16-20 yrs. Of the age of marriage we found 14% cases of cervicitis, 12% of hyperplasia, 18% of cervicitis & hyperplasia, 5% of dysplasia and 1% of invasive carcinoma. In age group of marriage of 21-25 yrs., there was 10% of cervicitis, 4% of hyperplasia, 14 % of cervicitis and hyperplasia, 3% of dysplasia and 3% of invasive carcinoma. In age group of 26-30 yrs. of marriage, there was 4% of cervicitis, 1% of hyperplasia, 1% of cervicitis and hyperplasia, 2% of dysplasia with no incidence of invasive carcinoma. Similarly, in age of marriage over 30 yrs. We found 1% of cervicitis and 1% of dysplasia with no incidence of hyperplasia or cervicitis and hyperplasia or invasive carcinoma. (Table-3)

Rotkin et al (1967), Terris et al (1969), Wahi et al (1969), Malli et al (1969), Millar et al (1976), Harris et al (1980), Bamford et al (1982), Candian Task Force (1982), Shah et al (1985) & Sebiprosch et al (1995) and others have their series of work on some aspects of the topic mentioned above. In only early age of marriage and pregnancy none of them have their work classified as ours as shown in table-3

We have done our observation taking consideration of parity of the patient in which, we found that the cervicitis was there in 5% of nulliparous women and 5% of uniparous women, 7% in biparous women, 8% in triperous women and 8% in multiparous women. Similarly we observed hyperplasia in 2% in nulliparous women, 4% in uniparous women, 3% in biparous women, 4% in triparous women and 5% in multiparous women. We observed cervicitis and hyperplasia in 3% in nulliparous women, 6% in uniparous women, 7% in biparous women, 8% in triparous women and 9% in multiparous women. Dysplasia was 2% in nulliparous women 3% in uniparous women, 2% in biparous women, 2% in triparous women and 3% in multiparous women. Incidence of invasive carcinoma was 1% in nulliparous women, 1% in biparous women and 2% in triparous women with no incidence in uniparous and multiparous women. (Table-IV)

SUMMARY & CONCLUSION

1. We divided our series of cases as age groups (Table-1) in which majority of our cases were in the age group of 21-30 yrs.
2. We observed the lesion of cervix more in younger age group i.e. 21-30 yrs. comprising 48%. (Table-II)
3. The marital status has got impact upon lesion of the cervix and we observed that the marriage in age group of 16-20 yrs. were more vulnerable to development of cervical lesion comprising of 50% cases. (Table-III)
4. Parity of the patient has got impact upon incidence of cervical lesion. 13% incidence of lesion of cervix were found in Nulliparous, 18% in uniparous, 20% in biparous, 24% in triparous and 25% in multiparous. (Table-IV)

REFERENCES

1. Mali S.Wahi P.N and Luthra, K.(1969)Cancer, 23:1221.
2. Naid, Z.N.; Nahmias, (1969) Cancer 19:1026 A. J. and Jossey, W.E.
3. Paterson O. (1969) Am., J. Obst. Gyne. 72:1063.
4. Chandra, K.: (1971) ; symposium on Exfoliation cytology by Indian Council of Medical Research. Technical Report Series.5:17.
5. Rao. A.; Krishna U; Purandare, V.N; and Purandare B.N.(1973) J. Obst. and Gynae. of India 23:3,315
6. Burghkaran E (1973) Major problems in Obstet and Gynae. 6:355-362.
7. Jussawala, D.J.(1973) Proc. Roy. Society of Medicine, 66:308.
8. Jones W.R.Kaye M.D.Ing.R.M.Y (1973) Sperm microagglutinating activity is serum of patients with cancer cervix AM.J.obs Gynae. (St. Louis) 116:883.
9. Cramer DW, Cutler SJ. (1974). Incidence and histopathology of malignancies of the female genital organs in the United states. Am. J. Obstet. Gynecol; 118 443-60.
10. Langley,F.A. and A.C. Crompton (1973) Epithelial Abnormalities of the cervix uteri. 1st En. P-71 New York Springer Verlag.
11. Nelson J.H.; Averetta H.E.; and Richard. R.M. (1975). Detection diagnostic evaluation treatment management flow charts, Am. Cancer Society.
12. Agnesamma Jacob, Sreedevi Amma, N and Mathew, KT (1976); J Obstet Gynge. Ind.29:1206
13. Chakravorty B.N., Poddar D.L.Sarkar, S.K. and Das, N. : (1976) : J. Obstet Gynec. Ind., 26:670
14. Miller AB., Lindsay J., Hill G.B.(1976) Int. J. Cancer, 17:602-605
15. Mayer E.G.Galindo J.Davis J. Wurzel J, Aristizabal S. (1976) Adenocarcinoma of the uterine cervix : incidence and the role of radiation therapy.Radiology; 121:725-9.
16. Rajan, R. : (1976): J. Obstet. Gynae. Ind.26:464
17. Talib, N.S. ; Deshpande, M.S. and Talib, V.H. : (1978) : J. Obsetet. Gynec. Ind. 28:423.
18. Feldman MJ; Kent D.R.; Pennington RL (1978) Intra eptithelial neoplasia of uterine cervix in teenager cancer. 41:1405.
19. Mishra J., Das, H (1979) J. Obst. & Gynae. of India. 29:3, 668.
20. Domadia M.M. & Vaidya P.R. (1975) : The Congress Preceedings:6th Asian Congress
21. Panda, S; Behra, N and Mahapatra, S.K. : (1979) : J. Obset Gynec. Ind. : 27: 401
22. Bilques J; Kachroo, S.; Khanam W and Dhar. G: (1980) J. Obstet Gynec. Ind. 30:536.
23. Landis, S.H.; Murray, T; Bolden, S; Wingo. P.A; Cancer statistics 1999. C.A.Cancer J.Clin 1999; 49:8-31.
24. Yamashita S, Nagai N, Oshita T, Sakata K, Murakami T, Shigemasa K, Tanioka. Y, Inai K, Ohama K. (2000) Hiroshima J. Med. Sci; 49(4): 167-73
25. Modern Colposcopy Textbook & A t lab, Second edition, Americau society for colposcopy & cervical pathology. kendall – Hunt publishiv co.Dubuque, 2004, chapter 2
26. A mauual of clinical colposcopy, Thomas M Juliau, MD. The Parthenon publishing Group my 2004.
27. Compreheusive Gynecology Droegemuller W, Herbst AL, michall, stendrvr MA. CV mosby co,st louis 2005.