Section: Pathology

Original Research Article

HISTOPATHOLOGICAL STUDY OF NEOPLASTIC LESIONS OF CERVIX- A DESCRIPTIVE STUDY

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ABSTRACT

Background: The uterine cervix, comprising the ectocervix and endocervix, is a common site for various gynaecological lesions, with the transformation zone being especially vulnerable to HPV infections and neoplasms. Cervical cancer remains a leading malignancy among Indian women due to poor awareness and limited screening, whereas its incidence has declined in developed countries owing to effective screening and HPV vaccination programs. The aim is to study the spectrum of various neoplastic lesions of cervix.

Materials and Methods: This prospective study, approved by the ethical committee, analysed 527 cervical specimens received at the Department of Pathology, Government Medical College, Miraj, over 21 months (October 2022–June 2024). Specimens included hysterectomy, cervical biopsy, and polypectomy samples with informed consent, excluding inadequate or unfixed samples and those without consent.

Results: The study analysed 527 cervical lesions, of which 86.72% were nonneoplastic and 13.28% neoplastic, predominantly affecting women aged 51–60 years. Among neoplastic cases, malignant tumors (67.14%) were common than benign lesions (28.57%). Among the malignant tumors, SCC was common followed by a single case of adenocarcinoma. Two cases of basaloid SCC and a single case of papillary SCC were found. In benign tumors, cervical polyps were common (60%) followed by leiomyomas (40%). A single case of PEcoma was found in our study. White discharge was the leading clinical presentation, observed in 67.14% of patients.

Conclusion: Cervical neoplasia ranges from benign tumors to invasive carcinoma, with cervical cancer being a leading cause of cancer deaths. Early histopathological diagnosis and comprehensive prevention, screening, and treatment strategies are key to reducing its public health burden.

Keywords: Cervical lesions, Histopathological, cervical cancer, early diagnosis.

INTRODUCTION

The cervix is inferior portion of the uterus projecting into upper vagina, anatomically divided into ectocervix and endocervix. Transformation zone an area where squamous and columnar epithelium meet is highly susceptible to HPV infections and neoplasms.[1] The uterine cervix serves as the gateway for a various gynaecological lesions, both nonneoplastic and neoplastic.[2] Complete and accurate assessment of cervical lesions relies on three methods including colposcopic examination, cervical cytology and histopathological examination.[3]

Cervical cancer ranks among top five cancer in Indian women carcinoma breast, carcinoma cervix, carcinoma ovary, carcinoma mouth and colorectum. Due to a lack of screening methods, misconceptions and poor awareness, carcinoma cervix is diagnosed late, leading to low survival rates in India.[4]

In India, cervical cancer is the major heath burden and is a major cause of morbidity and mortality.[5,6]

Majority of patients present with blood stained, whitish vaginal discharge or abnormal uterine bleeding.[7]

However, the International incidence of cervical cancer in developed countries has been declining over the past few decades which in part seems attributable to cervical cancer screening tests and HPV vaccination.[8,9]

Public health should be intensified to encourage early health seeking behaviour in order to diagnose cervical malignancy at an early age.[8]

MATERIALS AND METHODS

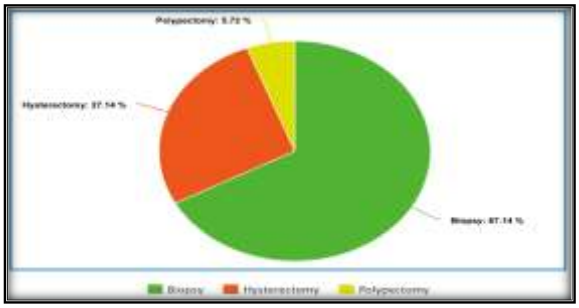
Our study was a prospective study approved by ethical committee (GMCM/IEC/C-18/2022) and included analysis of cervix specimens received in Department of Pathology, Government Medical College Miraj over a span of 21 months from October 2022 to June 2024. Sample size was 527.

All samples like hysterectomy, cervical biopsy and polypectomy specimens with written informed consent received during study were included, whereas exclusion criteria applied was inadequate/ unfixed specimens or if written informed consent of patient was not available.

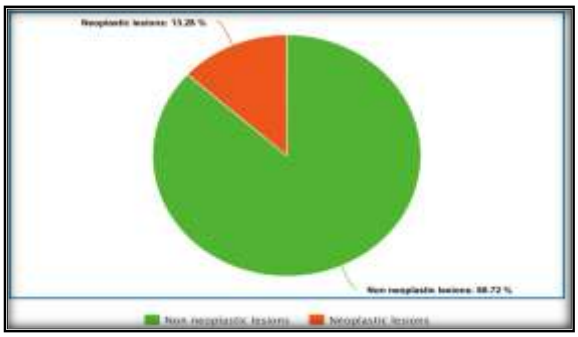
RESULTS

The most common specimen was cervical biopsy followed by hysterectomy specimen [Graph 1]

Total 527 cervical lesions were included in study, amongst these 457 were (86.72%) nonneoplastic and 70 (13.28%) were neoplastic [Graph 2].

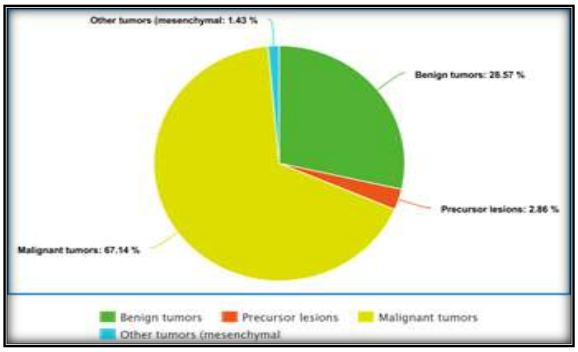


Graph 1: Distribution of types of specimens

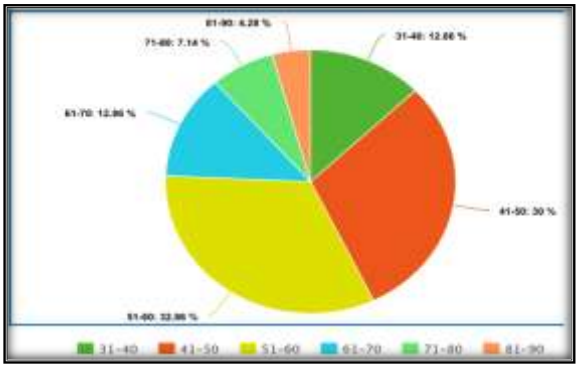


Graph 2: Distribution of cervical lesions

In our study, we found 70 cases of neoplastic lesions amongst these 47cases were of malignant nature and 20 cases of benign nature and 2 cases were precursor lesions. A single case of mesenchymal tumor was found [Graph 3]. Malignant tumors (67.14%) outnumbered benign tumors (28.57%).

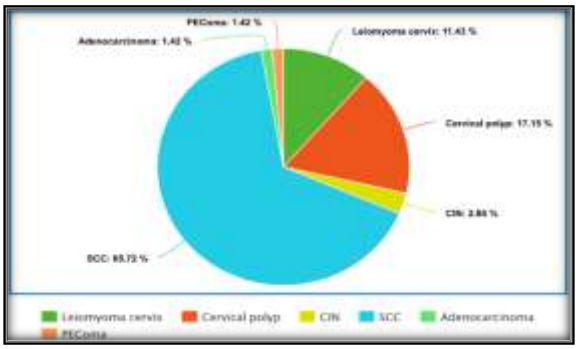


Graph 3: Distribution of neoplastic cervical lesions

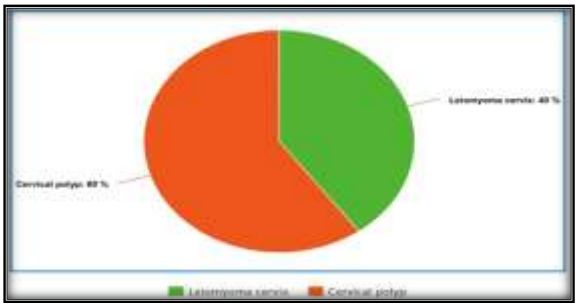


Graph 4: Age distribution of neoplastic cervical lesions

Age range was 31-90 years with majority of the cervical neoplasms seen in 51-60 years (32.86%) (Graph 4) with mean being 53.93 years.



Graph 5: Frequency distribution of neoplastic tumors



Graph 6: Distribution of benign cervical tumors according to histological type

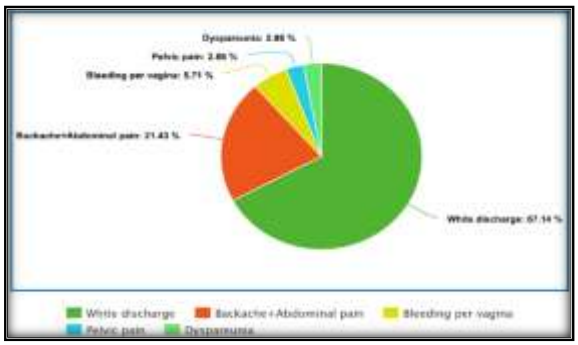
Amongst the malignant tumors, squamous cell carcinoma (65.72%) was the most common tumor found [Graph 5]. Single case each of adenocarcinoma and PEComa was found [Figure 10&11]. Amongst the benign tumors, most common was cervical polyp (17.15%) followed by leiomyoma (11.43%). Two cases of CIN were found [Figure 3].

Cervical polyp (60%) [Figure 1] was the most common benign tumor followed by leiomyoma cervix (40%) [Figure 2]

Table 1: Distribution of malignant cervical tumours according to histological type.

Sr.no	Diagnosis	No. of cases	%(Percentage)
1	SCC and patterns		
	Well differentiated SCC	9	19.15
	Moderately differentiated SCC	33	70.21
	Poorly differentiated SCC	1	2.13
	Basaloid SCC	2	4.25
	Papillary SCC	1	2.13
2	Adenocarcinoma	1	2.13
	Total	47	100

In our study, SCC (97.87%) [Figure 4-6] was the most common malignant tumor. Amongst the SCC, moderately differentiated SCC was most common, 2 cases of basaloid SCC (4.25%) [Figure 7] and a single case of papillary SCC (2.13%) [Figure 8] were found. Two cases showed changes of CIN with invasion [Figure 9]. We found single case of adenocarcinoma of cervix (2.13%) [Figure 10].



Graph 7: Distribution of cases according to clinical features

In our study, most common clinical feature was white discharge (67.14%) followed by other features like backache and abdominal pain (21.43%), bleeding per vagina (5.71%), pelvic pain (2.86%) and dyspareunia (2.86%). [Graph 7]

Photographs

Cervical polyp

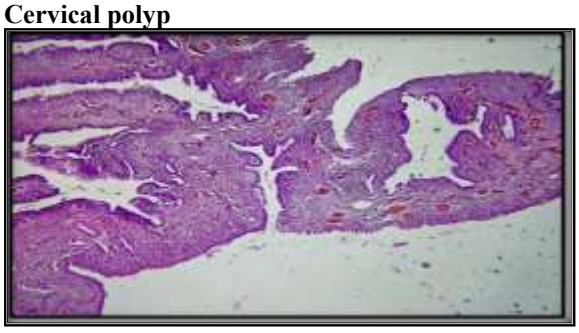


Figure 1: Photomicrograph shows endocervical polyp lined by columnar epithelium. The core of polyp shows dilated endocervical glands and stroma. The base of the polyp shows few thick walled blood vessels (H&E, X100)

Leiomyoma cervix

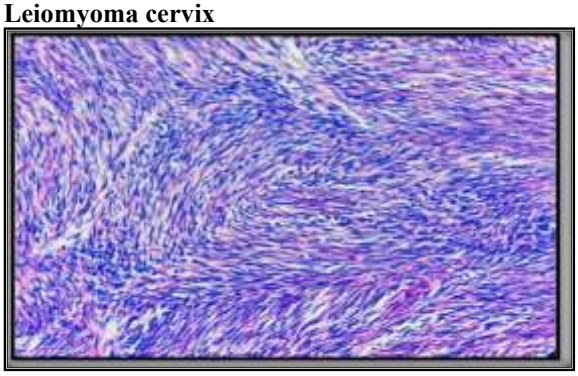


Figure 2: Photomicrograph of leiomyoma cervix showing spindle shaped cells with blunt ended elongated nuclei and moderate amount of eosinophilic cytoplasm arranged in interlacing fascicles and bundles. (H&E, X400).

Carcinoma in situ (HSIL)

Figure 3: Photomicrograph of HSIL showing tissue lined by stratified squamous epithelium with full thickness changes of carcinoma in situ. (H&E, X100)

Squamous cell carcinoma of cervix

Figure 4: Gross photograph of SCC of cervix showing elongation with an ulceroproliferative growth measuring 4.5x4x3cm at the cervical os.

Well differentiated SCC

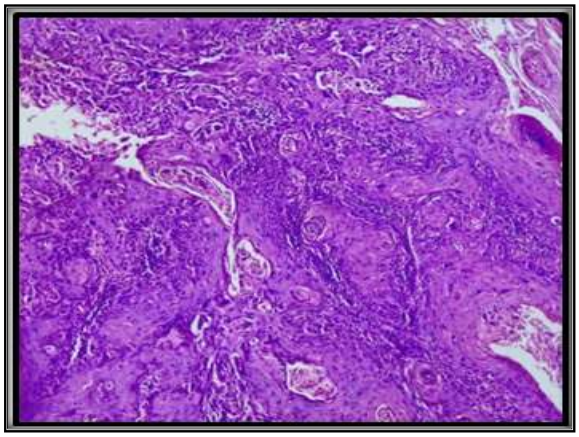


Figure no.5: Photomicrograph of well differentiated SCC showing tumor cells arranged in nests, clusters and sheets. Individual cell keratinization and numerous keratin pearls are noted. (H&E, X100)

Moderately differentiated SCC

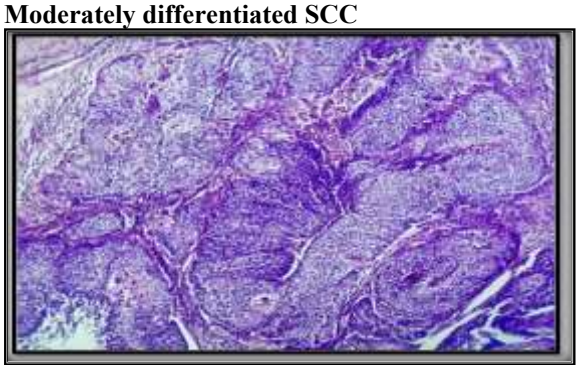


Figure 6: Photomicrograph showing moderately differentiated SCC with tumor cell arranged in nests, clusters and sheets. (H&E, X100)

Basaloid SCC

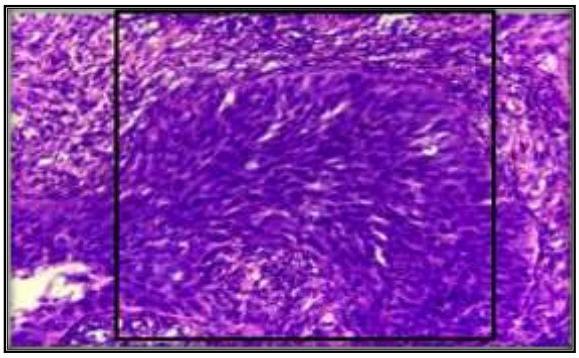


Figure 7: Photomicrograph of basaloid SCC showing nests of basaloid cells with peripheral palisading of the nuclei. (H&E, X400)

Papillary SCC

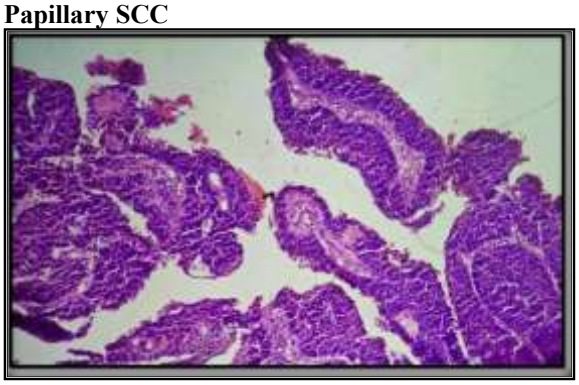


Figure 8: Photomicrograph of Papillary squamous cell carcinoma showing papillary architecture with fibrovascular cores lined by multilayered atypical squamous epithelium. (H&E, X100)

CIN with invasive SCC

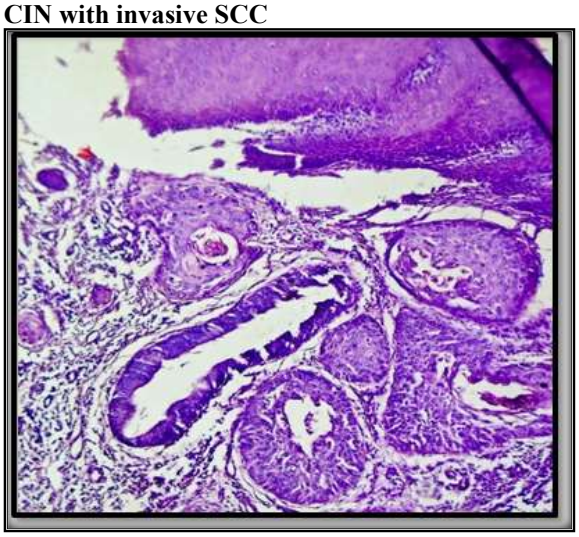


Figure 9: Photomicrograph shows squamous epithelium and underlying endocervical glands with changes of carcinoma in situ with tumor nests infiltrating the stroma. (H&E, X100)

Adenocarcinoma

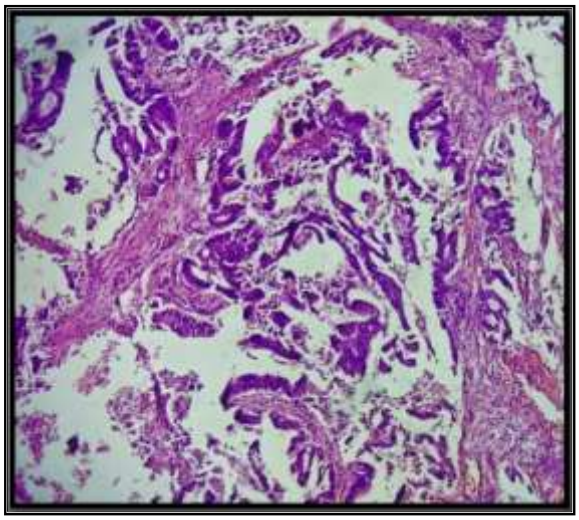


Figure 10: Photomicrograph of adenocarcinoma showing tumor composed of cuboidal to columnar cells having enlarged hyperchromatic nuclei and eosinophilic cytoplasm arranged in glandular pattern. (H&E, X400)

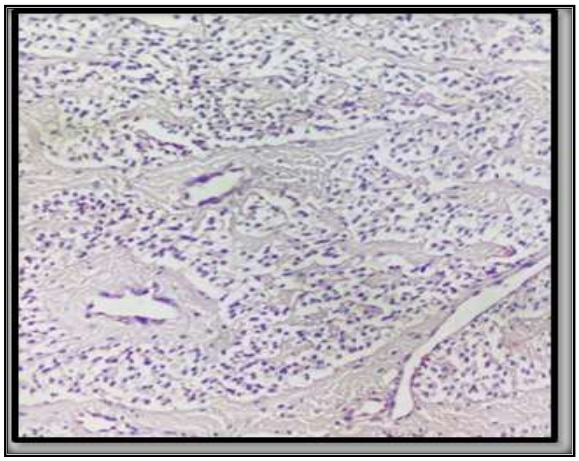


Figure 11: Photomicrograph of PEComa showing epithelioid and spindle cells with clear cytoplasm surrounding the blood vessels. No mitosis and necrosis seen. (H&E, X400) – Benign PEComa

DISCUSSION

As cervix is a gateway for sexual intercourse and reproduction, it is prone to sexually transmitted infections and urinary tract infections during intercourse, conception, pregnancy, delivery and post-partum period. Thereby being vulnerable to various pathological changes including inflammatory, reactive as well as neoplastic lesions. Majority of patients present with blood stained, whitish vaginal discharge or abnormal uterine bleeding. Patients between the age group of 50-59 years with these chief complaints should be investigated to exclude malignancy.

The most common presenting feature in our study was white discharge (67.14%) which was comparable to study done by Kumar et al,[11] Sathiyamurthy K et al.[10]

Table 2: Comparison of clinical features with other studies

Clinical features	Sathiyamurthy K et al [2021].[10]	Kumar et al [2022].[11]	Avani J et al [2018].[12]	Present Study
White discharge	396 (72%)	239 (68.29%)	108 (54%)	47 (67.14%)
Backache +Abdominal pain	130 (23.6%)	89 (25.43%)	50 (25%)	15 (21.43%)
Bleeding per Vagina	09 (1.6%)	07 (2%)	30 (15%)	4 (5.71%)
Pelvic pain	10 (1.8%)	11 (3.14%)	09 (4.50%)	2 (2.86%)
Dyspareunia	05 (1.0%)	04 (1.14%)	03 (1.50%)	2 (2.86%)
Total	550 (100%)	350 (100%)	200 (100%)	70 (100%)

Table 3: Comparison of frequency distribution of various cervical lesions with other studies

Sr. No	Cervical lesions	K.S.Kerthi et al [2021].[1]	Kumar et al [2022].[11]	Avani J et al [2018].[12]	Thirukumar M et.al [2020].[8]	Present study
1	Non-Neoplastic	512 (95.88%)	307 (87.71%)	121 (60.5%)	338 (66.54%)	457 (86.72%)
2	Neoplastic	22 (4.12%)	43 (12.29%)	79 (39.5%)	170 (33.46%)	70 (13.28%)
3	Total	534	350	200	508	527

In our study, we found nonneoplastic cervical lesions more than neoplastic lesions which was concordant to findings of Kumar et.al.[11] In comparative analysis, all the studies done showed almost similar result.

Table 4: Comparison of incidence of neoplastic lesions with other studies

Author	Total no. of neoplastic cervical lesions	Benign tumors	Precursor Lesions	Malignant tumors	Other tumors (Mesenchymal)
K.S.Kerthi et.al [2021].[1]	22 (100%)	01 (4.55%)	7 (31.81%)	14 (63.64)	-
Avani J et al [2018].[12]	79 (100%)	26 (32.91%)	46 (58.23%)	07 (8.86%)	-
Sathiyamurthy K et al [2021].[10]	97 (100%)	74 (76.29%)	13 (13.41%)	10 (10.30%)	-
Thirukumar M et al [2020].[8]	170 (100%)	101 (59.41%)	17 (10%)	52 (30.59%)	-
Present study	70 (100%)	20 (28.57%)	2 (2.86%)	47 (67.14%)	1(1.43%)

In our study, we found incidence of malignant tumors (67.14%) higher than benign tumors which was similar to findings of K.S.Kerthi et al.[1] In contrast, Sathiyamurthy K et al,[10] Thirukumar M et al,[8] observed that the incidence of benign tumors was more than malignant tumors. In the study done by Avani J et al,[12] precursor lesions were more common than benign and malignant tumors.

Table 5: Comparison of frequency distribution of various benign tumors with other studies

Sr. No.	Benign Tumors	K.S. Kerthi et al. (2021)	Sathiyamurthy K et al. (2021)	Avani J et al. (2018)	Thirukumar M et al. (2020)	Present Study
1	Cervical Polyp	1 (100%)	54 (72.97%)	25 (96.15%)	90 (89.11%)	12 (60%)
2	Leiomyoma Cervix	–	20 (27.03%)	1 (3.85%)	11 (10.89%)	8 (40%)
	Total No. of Benign Tumors	1 (100%)	74 (100%)	26 (100%)	101 (100%)	20 (100%)

In our study, we found maximum cases of cervical polyp (60%) followed by leiomyoma cervix which was concordant with study done by K Sathiyamurthy et al.[10]

Table 6: Comparison of frequency distribution of various malignant tumors with other studies

Author	K.S. Kerthi et al. (2021)	Sathiyamurthy K et al. (2021)	Thirukumar M et al. (2020)	Avani J et al. (2018)	Kujur P et al. (2021)	Present Study
Squamous Cell Carcinoma	13 (92.86%)	9 (90%)	45 (86.54%)	6 (85.71%)	16 (84.21%)	46 (97.87%)
Adenocarcinoma	1 (7.14%)	1 (10%)	6 (11.54%)	1 (14.29%)	1 (5.26%)	1 (2.13%)
Other Types of Malignancy	–	–	1 (1.92%)	–	2 (10.53%)	–
Total No. of Malignant Tumors	14 (100%)	10 (100%)	52 (100%)	7 (100%)	19 (100%)	47 (100%)

In our study amongst the malignant tumors, Squamous cell carcinoma of cervix was the most common histological type accounting for 97.87%. The result of our study was concordant with study done by K.S.Kerthi et al.[1] In comparative analysis, all the studies done showed almost similar result.

Table 7: Comparison of spectrum of histopathological patterns of squamous cell carcinoma with other studies

Author	K.S. Kerthi et al. (2021)	K. Sathiyamurthy et al. (2021)	Thirukumar M et al. (2022)	Fatima Q et al. (2017)	Sneha S et al. (2017)	Present Study
Well-differentiated SCC	1 (7.69%)	1 (22.22%)	9 (20%)	4 (2.35%)	17 (17%)	9 (19.57%)
Moderately differentiated SCC	11 (84.62%)	6 (66.67%)	32 (71.11%)	157 (92.24%)	65 (65%)	33 (71.74%)
Poorly differentiated SCC	1 (7.69%)	2 (11.11%)	4 (8.89%)	8 (4.7%)	18 (18%)	1 (2.17%)
Basaloid SCC	–	–	–	–	–	2 (4.35%)
Papillary SCC	–	–	–	1 (0.71%)	–	1 (2.17%)
Total	13 (100%)	9 (100%)	45 (100%)	170 (100%)	100 (100%)	46 (100%)

In our study moderately differentiated SCC was most common squamous cell carcinoma which was found more common in the age group of 51-60 years of age. Similar results were shown in all comparative studies done by Thirukumar M et al,[8] K. Sathiyamurthy et al,[10] Sneha S et al,[15] and K.S.Kerthi et al.[1]

CONCLUSION

Cervical neoplasia encompasses various benign tumors as well as an array of epithelial abnormalities ranging from preneoplastic lesions to invasive carcinoma. Cervical carcinoma forms a major bulk of carcinoma related deaths. Early diagnosis is vital for the reduction of the burden of ill health. Histopathology proves to be a valuable gold standard diagnostic tool for an accurate diagnosis. A comprehensive approach of prevention, screening, diagnosis and treating cervical carcinoma can help reduce the burden of a major public health problem.

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