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e-Newsletter

ISCCP

Member International Federation of Cervical Pathology and Colposopy

Newsletter of Indian Society of Colposcopy & Cervical Pathology (Reg.)

www.isccp.in

From the Editor's Pen

Dear ISCCP members

Greetings from ISCCP and Happy New Year to all,

May this new year bring health and prosperity to all of you and your families. May God give us more courage and determination to fight for our motto "Eradication of cervical cancer" as ISCCP members by effective screening, vaccination and management.

We all are aware of that infection of high-risk human papillomaviruses (HPVs) is a prerequisite for the development of cervical carcinoma. Chronic or persistent infection of HPV is essential, but HPV alone is inadequate for carcinoma development, additional endogenous or exogenous cues are needed along with HPV to induce cervical carcinogenesis. Various studies have revealed that in those cases where the cancer emerges, the high-risk HPVs present in differentiating epithelial cells reach a DNA-synthesis competent state leading to tumorigenic transformation due to overexpression of the E6 and E7 oncoproteins and the activation of diverse cellular regulatory or signalling pathways. In recent years, research on treatment strategies has proposed several options, including the role of HPV E5, E6, and E7 oncogenes, which are retained and overexpressed in most of the cervical cancers and whose respective oncoproteins are critical to the induction and maintenance of the malignant phenotype. In this issue we have discussed the HPV structure in detail so as to understand the pathophysiology of precancerous and cancerous lesions of cervix.

In another short article concept of **Cancer stem cells** responsible for development of cervical carcinoma is discussed. These cancer stem cells can be used for strategies to optimize anti-cancer treatments that specifically target tumor cells expressing putative CSC markers.

We hope that the current issue will enlighten you with a few more aspects of cervical carcinoma. This issue also contains the details of activities held in the last 3 months along with 'Journal Scan' and 'News from around the world' sections.

I, once again, request all the ISCCP members to contribute in the Newsletter in the form of review articles/original articles/viewpoint/case reports/images.

Happy New Year once again from the editorial team.

Chief Editor
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Forthcoming Conference

IFCPC India 2020
30th Sept. - 4th Oct., 2020
Hyderabad, India

Cervical Cancer Stem Cells

Editorial

Dr Aruna Nigam

Professor, Obstetrics and Gynaecology, Hamdard Institute of Medical Scenes and Research, Jamia Hamdard, New Delhi

It is well documented that surgery, chemotherapy and radiotherapy can cure more than 90% of women with early stage cervical cancer, the recurrent and metastatic disease remains a major cause of cancer mortality. Numerous efforts have been made to design new drugs and develop gene therapies to treat cervical cancer. Most of these newer strategies (like development of antitumor immunotherapy), in diagnosing and treating the disease are based on the understanding that during HPV infection, there is:

1. Disruption of cell cycle control
2. Perturbation of antitumor immune response
3. Alteration of gene expression
4. Deregulation of microRNA
5. Cancer stem cell and stemness related markers expression

The latest researches are now focussing on **Cervical cancer stem cells** which are essential targets of HPV infection. Cancer stem cells are the key factors that decide the treatment outcome as they are responsible for tumor phenotype, chemoradio responsiveness and tumor relapse. As it is well known that oncogenic HPV has predilection for basal epithelial cells present in transformation zone at the squamocolumnar junction (SCJ) where endocervix meets the ectocervix. SCJ is proposed to produce stem cells that maintain columnar and stratified epithelial cells. These stem cells are converted to cervical cancer stem cells by the interplay between HPV oncogenes and cellular alterations that are thought to be finally responsible for tumor initiation and maintenance. This hypothesis of cancer stem cells is supported various previous studies

- Existence of distinct population of cells at the SCJ of cervix with a unique gene expression profile which can be a cause of HR-HPV-induced cervical cancers.[1]
- Existence of a side population that is enriched with the characteristics of CSCs in HeLa cells.[2]
- Feng et al suggested that identification and characterization of cervical cancer stem-like cells were from primary cervical carcinoma using phenotype of CD44þ CK17þ.[3]
- cervical cancer cell lines contain a subpopulation of tumor initiating cells with stem-like properties that are target population for HR-HPV E6 that potentially regulate and maintain stem-like cancer cells via Hes1 signaling which may serve as an important drug target for therapeutic intervention of chemoradio resistant CSCs.[4]

These cancer stem cells can be used for strategies to optimize anti-cancer treatments that specifically target tumor cells expressing putative CSC markers.

I am also attaching the illustrative figure with this editorial which shows the mechanism for HPV associated pathogenesis (adopted from Current Problems in Cancer 2018;48:161–174).

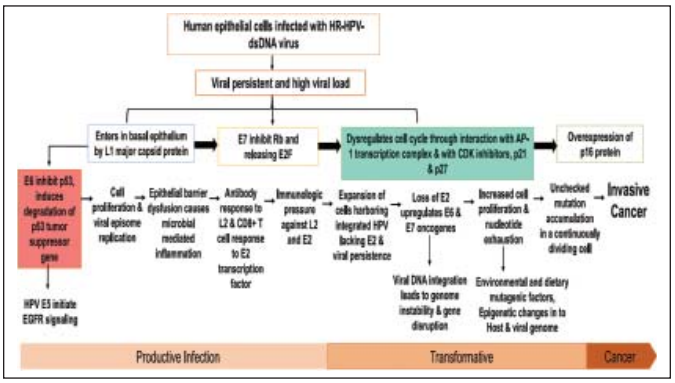


Figure 1: Mechanism for HPV associated pathogenesis

References

1. Herfs M, Yamamoto Y, Laury A, et al. A discrete population of squamocolumnar junction cells implicated in the pathogenesis of cervical cancer. Proc Natl Acad Sci USA 2012;109:10516–10521.
2. Kondo T, Setoguchi T, Taga T. Persistence of a small subpopulation of cancer stem-like cells in the C6 glioma cell line. Proc Natl Acad Sci USA 2004;101:781–786.
3. Feng D, Peng C, Li C, et al. Identification and characterization of cancer stem-like cells from primary carcinoma of the cervix uteri. Oncol Rep 2009;22:1129–1134.
4. Tyagi A, Vishnoi K, Mahata S, et al. Cervical cancer stem cells selectively overexpress HPV oncoprotein E6 that controls stemness and self-renewal through upregulation of HES 1. Clin Cancer Res 2016;22:4170–4184.

HPV - Structure Decoded

Baishali Jain[1], Nidhi Gupta[2]

[1]Senior Resident, [2]Assistant Professor, Department of Obstetrics and Gynaecology
Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, New Delhi

Papillomaviruses are small and epitheliotropic viruses that infect mucosal and cutaneous epithelia in a wide variety of higher vertebrates in a species-specific manner and induce cellular proliferation. More than 100 types of human papillomaviruses (HPVs) have been identified and approximately half of them infect the genital tract. Many types of HPV have been found in cervical cancers, while others are rare or not at all involved in large series of cancers, which gives rise to the nomenclature of 'high-risk' and 'low-risk' HPVs. These other types are associated with other anogenital and oropharyngeal cancers[1]. The majority of HPV infections are cleared within 6–10 months. Progression to cancer is rare. Persistent infections with HR HPVs are a critical risk factor for the development of HPV-associated precancer and cancer[2-4]. Delineating the differences intrinsic in these HR HPV genotypes as compared to the majority of HPV types that lack oncogenic potential, will help to elucidate the genetic basis of such carcinogenic properties. The recent advances in DNA sequencing technologies has revolutionized methods of HPV detection[5] contributing to a better understanding of HPV biology and the development of new therapies against HPV-associated cancers.

HPV is a circular, nonenveloped, icosahedral, single double-stranded DNA virus approximately 8 kb in size (Figure 1). These base-pairs (bp) are bound to cellular histones and contained in a protein capsid composed of 72 pentameric capsomers. The capsid contains two structural proteins — late (L)1 (55 kDa in size; 80% of total viral protein) and L2 (70 kDa) — which are both virally encoded. Upon infection, the virus exists as an autonomous episome in the host cell nucleus. The viral life cycle is mediated by a series of virus host interactions, which govern viral transcription, virion production and eventual clearance in the majority of infections[6,7].

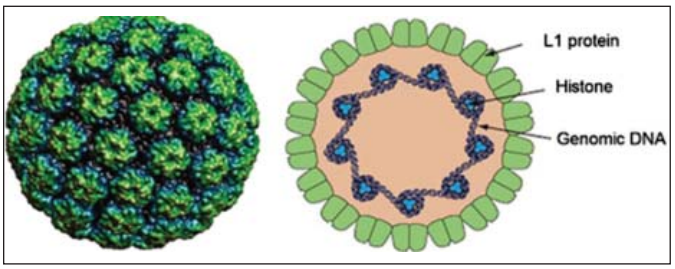


Fig 1: Structure of papilloma virus

The structure and function of the HPV genome are conserved throughout the Papillomaviridae and are broadly divided into 3 general components.

1. The early gene region, denoted by 'E', consists of 6 open reading frames (ORFs): E6, E7, E1, E2, E4, and E5.
2. The late gene region, denoted by 'L', consists of the L2 and L1 ORFs.
3. The upstream regulatory region (URR) - a noncoding region between the end of the L1 ORF and the E6 start codon, which comprises approximately 10% of the genome.

Table 1: HPV gene and their specific functions

Gene	Function
L1	Major Capsid Protein
L2	Minor Capsid Protein
E1	DNA Replication, Recognize Origin
E2	Main Regulator of the Viral Gene Transcription
E4	Cytokeratin Filament Collapse, Virion Release
E5	Cell Immortalization and Transformation
E6	Viral Oncoprotein
E7	Viral Oncoprotein

Table 1 describes the HPV gene and their functions. The early genes E1, E2, E6 and E7 are generated as a polycistronic transcript. They code for non-structural proteins that facilitate viral replication, adaptation of the cellular milieu for viral activities, trans-activation of viral transcription and cellular transformation and proliferation. Several additional early ORFs E3, E5 and E8 have also been identified, but their expression is not uniformly observed throughout the Papillomaviridae.

L1 and L2 encode the structural proteins, the major and minor capsid proteins, respectively. The L2 ORF encodes for group-specific epitopes whereas the L1 ORF contains type-specific protein domains. They are required for virion assembly.

The URR contains DNA recognition sites for both viral and host transcription factors and regulates early gene transcription, viral amplification and cellular tropism. The URR contains a keratinocyte-specific enhancer region proximal to the early gene promoter (p97), which highlights the significance of host cell tropism to viral gene expression and life cycle. A smaller noncoding region located between the E5 stop and L2 start codons harbors a highly conserved early polyadenylation signal required for gene expression from the early promoter[8]. The viral E proteins are transcribed from the early promoter (P97) whereas the L proteins are transcribed principally from the late promoter (P742).

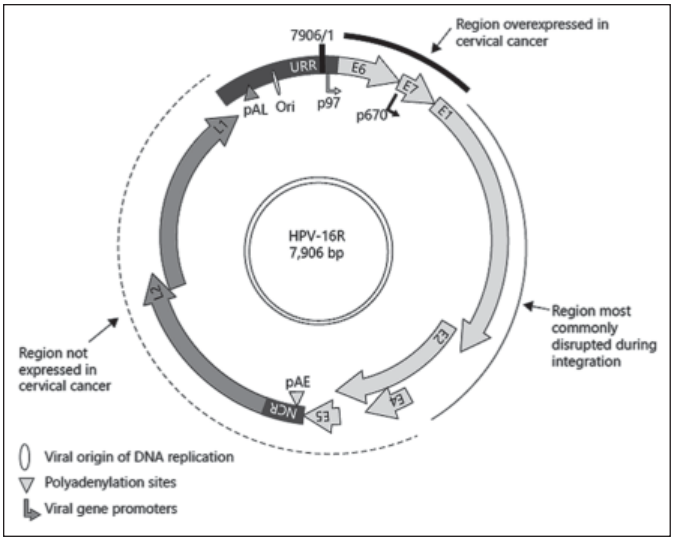


Fig 2: Schematic of the HPV-16R genome

The viral proteins E1 and E2 help in viral genome replication and are dependent on the host DNA polymerase and replication machinery. E1 is an ATP-dependent helicase, that melts double-stranded DNA for strand separation, prior to DNA polymerization. The E2 ORF encodes for a viral-DNA binding transcription factor. E1 and E2 proteins form heterodimers at the viral origin of replication to initiate bidirectional genome synthesis. It has been recently shown that E1 & E2 function to early induce the DNA damage response pathway contributing to a permissive environment for viral genome amplification[9]. E1 can induce beaks in the host double-stranded DNA that activates the ataxia-telangiectasia DNA damage response pathway, signaling cell cycle arrest[9]. The URR contains 4 highly conserved E2 binding sites that differentially regulate viral replication and early gene transcription[10,11]. E2-dependent downregulation of early promoter activity maintains low-copy numbers of viral genomes prior to differentiation dependent activation of the late promoter and genome amplification. In high-grade neoplastic lesions/cancer the E2 ORF can be disrupted by viral integration into the host genome. Integration results in the loss of E2-dependent early promoter regulation, a ramification of which can be overexpression of E6 and E7[6,7,12].

The viral proteins E6 and E7 function as oncogenes in the HR HPVs. They disrupt cell cycle regulation in upper epithelial cells (stratum spinosum), which normally exit the cell cycle to terminally differentiate. E6 and E7 cause inactivation of key cell cycle regulators, the known tumor suppressors, p53 and pRb respectively[13]. During the viral life cycle, E6 and E7 facilitate stable maintenance of viral episomes and stimulate differentiating cells to re-enter the S phase. Together, they create a cellular environment in which normal checks on cell-cycle control are lost, allowing mutations to occur. It is the accumulation of mutations that promotes carcinogenesis. The E5 ORF encodes a transmembrane protein that probably contributes to cell signaling[14]. At the nucleotide level, E5 is not highly conserved. It is associated with late gene viral life cycle events and interacts with epidermal growth factor and platelet-derived growth factor to influence cellular proliferation[15]. Several additional early ORFs E3, E5 and E8 have also been identified, but their expression is not uniformly observed throughout the Papillomaviridae.

The late genes L1 and L2 function in virion maturation and orchestrate virion self-assembly that packages the genome for release in the upper epithelia. During late stages of precancer/cancer, L1 and L2 proteins are not expressed. Virus-like particles made from HR HPV L1 readily self-assemble and induce a neutralizing antibody response. This is the basis for the two prophylactic vaccines currently available.

The HPV gain (figure3) access to the underlying basal epithelium through naturally thin basal epithelial layers such as those found in the transformation zone of the cervix in young women or through micro abrasion in the epithelium produced during sexual intercourse[16]. However, internalization of virions into the basal cells occur through endocytosis[17-19]. Inside the cell, the papillomavirus uncoats by the disruption of intra capsomeric disulphide bonds as a result of reducing environment of the cell allowing viral DNA to be transported to the nucleus[20]. Initially, the viral genome replicates to a low copy number of about 100 virions and can persist in the basal epithelial cells in episomal form for varying periods of time[21].

E1 and E2 are expressed to maintain the viral DNA in episomal form while the viral genes E5, E6 and E7 enhance the proliferation of the infected cells and their lateral expansion[22,23]. As the basal cells continue to proliferate, the supra-basal cells infected with HPV continue to express E6 and E7, blocking the exit of daughter cells from the cell cycle[24,25]. In the upper layers of the mucosa, where the basal cells reach the stage of terminal epithelial differentiation, E1, E2, E6 and probably E7 genes are expressed, finally resulting in replication of the genome, assembly, maturation and release of the viral particle. Viral integration into the host genome is considered to be a critical event in malignant transformation. It assures

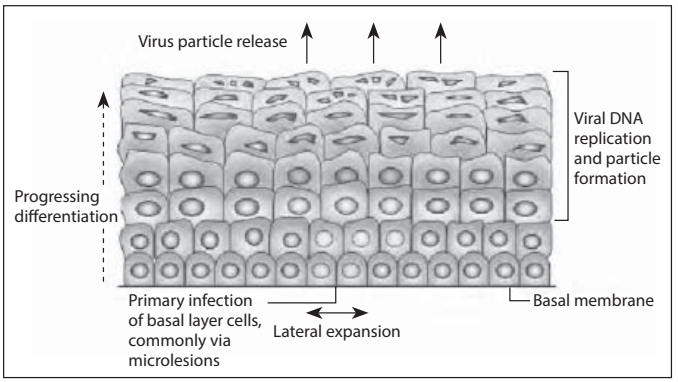


Fig 3: Schematic representation of different phases of an HR-HPV infection

the persistent expression of the HPV oncoproteins E6 and E7 in the basal and parabasal cells of the anogenital epithelium leading to malignancy[26,27].

References

1. Book on Human Papillomaviruses: International Agency for Research on Cancer; 2007
2. Herbst LH, Lenz J, Van Doorslaer K, et al: Genomic characterization of two novel reptilian papillomaviruses, Chelonia mydas papillomavirus 1 and Caretta caretta papillomavirus 1. Virology 2009;383:131–135.
3. Lange CE, Favrot C, Ackermann M, Gull J, Vetsch E, Tobler K: Novel snake papillomavirus does not cluster with other non-mammalian papillomaviruses. Virol J 2011;8:436.
4. Bernard HU: Coevolution of papillomaviruses with human populations. Trends Microbiol 1994;2:140– 143.
5. Ong CK, Chan SY, Campo MS, et al: Evolution of human papillomavirus type 18: an ancient phylogenetic root in Africa and intratype diversity reflect coevolution with human ethnic groups. J Virol 1993; 67:6424–6431.
6. Mighty KK, Laimins LA: The role of human papillomaviruses in oncogenesis. Recent Results Cancer Res 2014;193:135–148.
7. Doorbar J, Quint W, Banks L, et al: The biology and life-cycle of human papillomaviruses. Vaccine 2012; 30:F55–F70.
8. Johansson C, Schwartz S: Regulation of human papillomavirus gene expression by splicing and polyadenylation. Nat Rev Microbiol 2013;11:239–251
9. Reinson T, Toots M, Kadaja M, et al: Engagement of the ATR-dependent DNA damage response at the human papillomavirus 18 replication centers during the initial amplification. J Virol 2013;87:951–964.
10. Phelps WC, Howley PM: Transcriptional trans-activation by the human papillomavirus type 16 E2 gene product. J of virol 1987;61:1630–1638.
11. Bedrosian CL, Bastia D: The DNA-binding domain of HPV-16 E2 protein interaction with the viral enhancer: protein-induced DNA bending and role of the nonconserved core sequence in binding site affinity. Virology 1990;174:557–575.
12. Hegde RS: The papillomavirus E2 proteins: structure, function, and biology. Annu Rev Biophys Biomol Struct 2002;31:343–360
13. 5 Fu L, Van Doorslaer K, Chen Z, et al: Degradation of p53 by human Alphapapillomavirus E6 proteins shows a stronger correlation with phylogeny than oncogenicity. PloS One 2010;5:e12816.
14. Chen SL, Mounts P: Transforming activity of E5a protein of human papillomavirus type 6 in NIH 3T3 and C127 cells. J Virol 1990;64:3226–3233.
15. Hwang ES, Nottoli T, Dimaio D: The HPV16 E5 protein: expression, detection, and stable complex formation with transmembrane proteins in COS cells. Virology 1995;211:227–233.
16. Schiffman M, Kjaer SK. J Chapter 2: Natural history of anogenital human papillomavirus infection and neoplasia. Natl Cancer Instit Monogr 2003; 31:14- 9.
17. Giroglou T, Sapp M, Lane C, et al. Immunological analyses of human papillomavirus capsids. J Virol 2001; 9:1783-93.
18. Culp T and Christensen ND. Kinetics of in vitro adsorption and entry of papillomavirus virions. Virology 2004; 319:152-61.
19. Day P, Lowy DR and Schiller JT. Papillomavirus es infect cells via a clathrin- dependent pathway. Virology 2003; 307:1-11.
20. Selinka H, Giroglou T, Snapp M. Analysis of the infectious entry pathway of human papillomavirus type 33 pseudovirus. Virology 2002; 299:279-87.
21. Li M, Beard P, Estes PA, Lyon M. et al. Intracapsomeric disulphide bonds in papillomavirus assembly and disassembly. J Virol 1998; 72:2160-7.
22. Oguchi T, Sato S, Xiao YH, et al. Usefulness of PCR in situ hybridization as a technique for morphological detection of human papillomavirus in uterine cervical neoplasia. Eur J Gynecol. Oncol 2000; 21:585-7.
23. Wilson V, West M, Woytek K, et al. Papillomavirus E1 proteins: Form, function and features. Virus Genes 2002; 24:275-90.
24. Zur Hausen, H., Papillomaviruses and cancer: From basic studies to clinical a. application. Nature Reviews Cancer, 2002. 2: p. 342 - 350.
25. Jeon S, Allen-Hoffmann BL and Lambert PF. Integration of human papillomavirus type16 into the human genome correlates with a selective growth advantage of cells. J Virol 1995; 69:2989–97.
26. Flores E, Allen-Hoffmann BL, Lee D, et al. Establishment of the human papillomavirus type 16 (HPV-16) life cycle in an immortalized human foreskin keratinocyte cell line. Virology 1999; 262:344–54.
27. Duensing S, Munger K. Mechanism of genomic instability in human cancer: insights from studies with human papillomavirus oncoproteins. Int J Cancer 2004; 109:157-62.

Guidelines for Authors

All members of ISCCP are requested to send manuscripts pertaining to (but not exclusively limited to) to cervical cancer prevention/ treatment for publication in the newsletter. The matter should be original and not published/under consideration for publication elsewhere.

This could be in one of following forms:

1. **Original Article:** Articles from original research (including aim, methods, results and discussion), should not exceed 5-6 typed pages, word limit of 1500 words and not more than 10 references. Tables and Figures could be included as per requirement.
2. **Review Article:** The article should not exceed 3-4 typed pages, word limit 2500 words with not more than 8 references.
3. **Case Report:** An interesting case report which has "take home message", word limit 800 words with not more than 3-5 references. Image should be sent separately in JPEG format
4. **Report of conferences/ CME? awareness/training camps:** up to 300 words with 2-3 images

References: References should be recent, relevant, indexed and in Vancouver style. References to literature cited should be numbered consecutively and placed at the end of the manuscript. In the text they should be indicated as superscript. All papers submitted are subject to review process. All accepted papers will be suitably edited before publication.

Submit to: Dr Aruna Nigam, praksharuna@hotmail.com

Cervical Cancer News from Around the World

Roopa Hariprasad
Scientist E & Head, Division of Clinical Oncology
ICMR-National Institute of Cancer Prevention and Research (under Ministry of Health and Family Welfare, Govt. of India)
Co-Editor, Indian Society of Colposcopy & Cervical Pathology
Course Director & Convenor, NICPR-ECHO Online Cancer Screening Program

Cervical Screening: DIY alternative to smear test 'promising'

BBC News: 5 November 2019

The new method could be used as an alternative to the smear test and would not require a visit to the doctor. Scientists at Queen Mary University of London asked 600 women to provide self-collected samples for screening.

Researchers say that in the future, some women could order the test kits online, use them at home and then send their sample by post to be analyzed.

To read more:
https://www.bbc.com/news/health-50287047

Microsoft Uses AI to Diagnose Cervical Cancer Faster in India

November 9, 2019

The existing methodology that cytopathologists use is time consuming to begin with, but also because there are very few of them in the nation. Could AI speed this up? The largest chain to offer diagnostic services in pathology and radiology in India are getting an early look of this. Last year, Microsoft partnered with SRL Diagnostics to co-create an AI Network for Pathology to ease the burden of cytopathologists and histopathologists.

Cytopathologists at SRL Diagnostics studied digitally scanned versions of Whole Slide Imaging (WSI) slides, each comprising about 300-400 cells, manually and marked their observations, which were used as training data for Cervical Cancer Image Detection API.https://techcrunch.com/2019/11/09/microsoft-srl-diagnostics-cervical-cancer/

Women Should Be Offered Cancer Screening Checks During Lunch Breaks, Review Urges

October 16, 2019

Professor Sir Mike Richards, the former national cancer director at the Department of Health, said patients need to be given more choice over where and what time they go for tests in a bid to halt the "worrying decline" in the number of people attending.

More than one in four women in the UK are not attending their appointments when invited. And, earlier this year, it was revealed that more than 1.25 million women had waited too long for smear test results in 2018. Failing IT systems were blamed – some of which have had issues since 2011.

To read more:
https://www.huffingtonpost.co.uk/entry/would-you-have-a-smear-test-if-they-were-available-on-lunch-breaks-or-after-work_uk_5da6d01fe4b02253a2faae79

Women Less Likely to Get Screenings with Age, Research Says

By Spectrum News Staff Florida
PUBLISHED 9:59 AM EST Nov. 11, 2019

Study led by University of Michigan Rogel Cancer Center, a first-of-its kind study finds women are less likely to get screenings as they age. Researchers say confusion about recommended screening intervals could be a factor in the drop-off. The full report was published in "Preventive Medicine."

To read more:
https://www.baynews9.com/fl/tampa/health/2019/11/11/women-less-likely-to-get-screenings-with-age-research-says

Siegler E, Reichman Y, Kugelman N, Mackuli L, Lavie O, Ostrovsky L, Shaked-Mishan P, Segev Y.

Low-Risk Human Papillomavirus Types in Cervical Intraepithelial Neoplasia 2-3 and in Invasive Cervical Cancer Patients

J Low Genit Tract Dis. 2019 Oct;23(4):248-252

This nested cohort study is reported from Israel. The aim of the study was to evaluate the incidence of low-risk HPV (LR-HPV) types by HPV-DNA testing among women with cervical intraepithelial neoplasia (CIN 2-3) and CC.

Authors collected clinical data on 608 women of whom 402 were with CIN 2-3 and 206 with diagnosis of CC.

Result

When examining 14 high-risk HPV (HR-HPV) types, patients with CIN 2-3, 90.3% were found positive to at least one type of HR-HPV, 89.8% from CC patients were found positive to at least one type of HR-HPV.

A total of 4.5% of patients with CIN 2-3 and 3.9% of those with CC were positive to only one LR-HPV or to some of a few LR-HPV types. Among 5.2% with CIN 2-3 and 6.3% of those with CC, no HPV types were detected.

The authors concluded that the prevalence of the LR-HPV in high-grade squamous intraepithelial lesion cervical lesions is low but is expected to increase in the future because of the expected decrease in CC caused by HPV types that are included in the bi-, quadri-, and nanovalent vaccine. The CIN 2-3 and CC patients with LR-HPV types and with negative HPV, challenge HPV screening sensitivity, which is based on a limited number of HR-HPV types.

Shi Q, Xu L, Yang R, Meng Y, Qiu L.

Ki-67 and P16 Proteins in Cervical Cancer and Precancerous Lesions of Young Women and The Diagnostic Value for Cervical Cancer and Precancerous Lesions

Oncol Lett. 2019 Aug;18(2):1351-1355

This study reported from Shanghai University reports on expression and diagnostic value of Ki-67 and P16 proteins in cervical cancer and precancerous lesions of young women.

A total of 64 paraffin-embedded specimens of uterus tissue from young female patients who were admitted to Jiading District Central Hospital Affiliated to Shanghai University of Medicine and Health Sciences from January 2015 to December 2017 were selected.

According to pathological examination, the specimens were divided into chronic cervicitis group (control group, 10 cases), low-grade squamous intraepithelial lesion (LSIL) group (12 cases), high-grade squamous intraepithelial lesion (HSIL) group (20 cases) and squamous carcinoma of the cervix (SCC) group (22 cases).

Results

Expression of Ki-67 and P16 protein was detected by immunohistochemistry and the diagnostic values were analyzed. Positive rates of Ki-67 and P16 expression in HSIL and SCC groups were significantly higher than those in LSIL and control groups ($P<0.05$), but there was no significant difference between LSIL and control groups ($P>0.05$).

Spearman's analysis showed that the expression levels of Ki-67 and P16 were positively correlated with the degree of cervical lesions ($rs=0.725$; $rs=0.829$), and their expression levels were also positively correlated ($rs=0.772$).

Sensitivity and specificity analysis showed that the Ki-67 diagnosis has higher sensitivity (95.2%), but the specificity is poor (86.7%).

Diagnosis using P16 has high specificity (94.6%), but the sensitivity is poor (85.4%).

When the two were combined for diagnosis, sensitivity (94.8%) and specificity (93.2%) were both at a high level.

Authors proposed that combined detection of Ki-67 and P16 protein has a high application prospect as an auxiliary diagnosis of SCC.

ISCCP Activities

Professor Nisha Singh
Department of Obstetrics and Gynaecology, King George's Medical University, Lucknow

IMS +ISCCP Colposcopy workshop at Bhopal was organized on 12th October 2019 by Dr Madhuri Chandra. Screening techniques for cervical intraepithelial lesions and cervical cancers, management of CIN and prevention by HPV vaccines were discussed in detail by Dr Sweta Belani, Dr Meeta Agarwal, Dr Rekha Sapkal, Dr Veena Acharya, Dr Leela Digurmati, Dr Ranjana Desai and Dr Aruna Nigam. Interactive discussion with case scenarios concluded the session and was much appreciated by the delegates.

Cervical cancer related activities by Dr Bharati abhyankar (Oct to Dec 2019): As part of NCDCP programme by Government Dr Bharati -Trained nurses from nearby primary health centers, Trained Medical Officers of near by primary health centers. She also conducted one day colposcopy workshops at Yavatmal, Amravati and Akola.

IMS – ISCCP workshop on cervical cancer screening and colposcopy in Pune on 10th Nov 2019: Pune Menopause Society and ISCCP organized a workshop on Cervical Cancer Screening and Colposcopy at Bharati Vidyapeeth Hospital, Gynaec Dept. on 10th Nov. 2019, from 9.00am to 4.00pm. It was attended by 60 delegates which included practicing gynaecologist, teachers and postgraduate students. Topics discussed covered HPV Vaccination, Cervical Cancer Screening Guidelines, by IMS members. Role of Colposcopy in Management of LSIL and HSIL. Different Modalities of Treatment of HSIL like Ablation, Excision, LEEP were elaborated by experts from ISCCP. Delegates were guided by the faculty, on use the of equipments and instruments with lot of practical tips. New Mobile colposcope and Visual Pap were introduced by CEO of Mobile ODT.

EARLY BIRD REGISTRATIONS OPEN

International Federation of Cervical Pathology & Colposcopy 2020

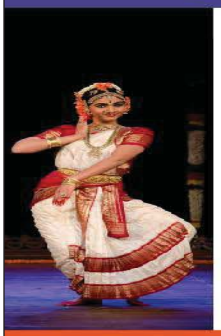
IFCPC INDIA 2020 Eliminating Cervical Cancer-Call for Action

30Sept.-4 Oct 2020, Hyderabad, India

17th World Congress for Cervical Pathology and Colposcopy

Hyderabad International Convention Centre, Hyderabad

HIGHLIGHTS



FIRST TIME IN ASIA!

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PRE-CONGRESS WORKSHOPS

Wednesday, 30 September 2020

- Training the Trainer
- Vulva with Hands-on Module
- Screen 'n' Treat

Thursday, 1 October 2020

- Comprehensive Colposcopy Course & Hands-on LEEP
- Cytopathology & HPV
- Surgical Options for CIN & Cervical Cancer (Live Surgery)
- Vulvar Reconstructive Surgery

ONLINE ABSTRACT SUBMISSION

OPEN

THEMES

All aspects of Cervical Cancer
From Prevention to Treatment

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Medical Students
Nurses
Trainees
Researchers in related disciplines

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