

RESEARCH COMMUNICATION

Value of Colposcopy in the Early Diagnosis of Cervical Cancer in Patients with Abnormal Pap Smears at Shahid Sadoughi Hospital, Yazd

Mojgan Karimi Zarchi^{1*}, Fariba Binesh², Zohre Kazemi³, Soraya Teimoori⁴, Hamid Reza Soltani⁴, Zohre Chiti⁴

Abstract

Background and objectives: Cervical cancer is preventable, although it is common in developing countries and Iran, where there is no defined approach to “atypical squamous cells of undetermined significance” (ASCUS) on Pap smears. This study determined the value of colposcopy in the early diagnosis of cervix cancer in females with ASCUS. **Materials and methods:** This accuracy study examined 213 ASCUS cases referred from different cities from 2007 to 2009. All patients underwent a repeated conventional Pap smear, colposcopy, endocervical curettage, and a cervical biopsy, considered the gold-standard diagnostic test. **Results:** There was no significant relationship between age, age of first intercourse, smoking, or number of children and a positive cervical biopsy. The sensitivity and specificity of a repeat Pap smear for ASCUS were 15 and 93%, respectively, while the respective values for diagnosing cervical cancer with colposcopy were 80 and 80%. Endocervical curettage had 64% sensitivity and 100% specificity for diagnosing cervical cancer, and 11 positive neoplastic or malignant lesions reported on endocervical curettage were confirmed by biopsy. **Discussion:** Based on the low accuracy of the Pap smear in Iran as a developing country and the need for an early diagnosis of cervical cancer, a cervical biopsy and colposcopy are recommended for these patients. Colposcopy and endocervical curettage alone are better diagnostic tools than a repeat Pap smear for unsatisfactory Pap smears.

Keywords: Colposcopy - conventional pap smear - cervical cancer - endocervical curettage

Asian Pacific J Cancer Prev, 12, 3439-3441

Introduction

In developing countries, cancer of the cervix is the most common cause of death in females (Spensley et al., 2009), although this cancer is largely preventable (Sardi et al., 2004; Ota et al., 2007). The most cost-effective diagnostic method for cancer of the cervix is the Papanicolaou test (Pap smear), which was recently reported to have a sensitivity of 85.2% and specificity of 90.6%, in a Chinese study (Moy et al., 2010). An abnormal Pap smear is an indication for colposcopy, endocervical curettage, and biopsy of the cervix to diagnose cervical cancer (Krivak et al., 2007). The sensitivity of a simple Pap smear for diagnosing precancerous lesions is 51%. In patients exposed to human papilloma virus (HPV), the permanent infection can progress to cervical intraepithelial neoplasia (CIN) (Ley et al., 1991; Koatsky et al., 1992). In a study conducted in Iran in 2009, less than 2% of the patients with cervical cancer had undergone a Pap smear in the previous 10 years (Karimi Zarchi et al., 2010). The incidence of cervical cancer in patients undergoing frequent Pap smears is also increasing (Berek,

2005) and 30% of new cervical cancer is seen in patients who had a Pap smear with mistakes in sampling, fixation, or reporting (Sawaya et al., 1999). This study examined the accuracy of colposcopy in the early diagnosis of cervical cancer in patients with “atypical squamous cells of undetermined significance” (ASCUS) found on a Pap smear who were referred to Shahid Sadoughi Hospital, in Yazd, Iran, from 2008 to 2010.

Materials and Methods

This was a descriptive-analytical diagnostic study that examined 213 cases with ASCUS seen on Pap smears referred to Shahid Sadoughi Hospital, from cities in south and central Iran. Most of the patients were from lower socioeconomic groups. All persons who had a Pap smear and colposcopy, after providing informed consent, underwent a repeat Pap smear. After colposcopy, endocervical curettage was done and the results were compared with the pathology report, considered the gold-standard. Data were analyzed using the chi-squared test and Fisher's exact test using SPSS software for Windows.

¹Gynecology Oncology Department, ²Pathology, ³Obstetrics & Gynecology, Shahid Sadoughi University of Medical Science, ⁴Medical Student Scientific Association, Islamic Azad University Branch, Yazd, Iran *For correspondence: drkarimi2001@yahoo.com

Table 1. Diagnostic Results From Colposcopy, Endocervical Curettage, Biopsy and Pop-smear Repetition

Results	Colposcopy	Endocervical curettage	Biopsy	Second pop-smear
Normal	166(77.9)	90(43)	193(90.6)	198(93)
CIN1	32(15)	8(5.2)	16(6.5)	
CIN2	12(6.5)	1(0.5)	2(0.9)	
CIN3	3(4.1)			
SCC		2(1)	2(0.9)	
Unsatisfactory		79(37.1)		
ASCUS				14(6.6)
LSIL				1(0.5)
Total	213(100)	210(100)	123(100)	213(100)

Table 2. Sensitivity and Specificity of Pop-smear, Colposcopy Appearance and Endocervical Curettage According to Biopsy, Gold Standard Test

	Biopsy		
	Positive	Negative	
Pap-smear			
Positive	3 (15%)	12 (6.2%)	Sensitivity:15%
Negative	17 (85%)	181 (93.8%)	Specificity:93%
Colposcopy appearance			
Positive	16 (80%)	37 (19.2%)	Sensitivity:80%
Negative	4 (20%)	156 (80.8%)	Specificity:80%
Endocervical curettage			
Positive	11 (64.7%)	0 (0%)	Sensitivity:64%
Negative	6 (35.3%)	117 (100%)	Specificity: 100%

Results

Overall, 198 of 213 cases had a normal second Pap smear, while 14 cases (6.6%) had ASCUS and one case (0.5%) had low-grade squamous intraepithelial lesions (LSIL) (see Table 1). All patients were biopsied, even with normal colposcopic findings and 20 cases (9.4%) had positive evidence of malignancy; the remaining 193 cases (90.6%) were negative for malignancy and cancer. Patients with a positive biopsy had CIN1 (16 patients), CIN2 (2 patients), and cervical squamous cell carcinoma (SCC; 2 patients). Macroscopic colposcopy findings diagnosed only 16 of the 20 patients, while endocervical curettage diagnosed 11 of the 20 malignancies. All cases were compared in terms of age, age of marriage, smoking, number of children, and contraceptive methods. Sensitivity and specificity of Pap smear, colposcopy and endocervical curettage is shown in Table 2.

Discussion

This study that was extracted of an assistant tez showed efficacy of colposcopy and cervical biopsy is better than repeated pap test and cervical biopsy for early diagnosis of cervical cancer in Iran as a developing country.

The concept of pre-invasive cervical disease was first presented in 1947. It was described as epithelial changes that look like invasive cancer, but are limited to the epithelium (Berek, 2005), and can progress to cancer (American Cancer Society, 2004). The concept of cervical intraepithelial neoplasia (CIN) was introduced

in 1968, when Richart reported that all types of dysplasia have the ability to progress. Today, it is known that most CIN1 lesions and some untreated CIN2 lesions will regress spontaneously (American Cancer Society, 2004). In another study of 920 patients with ASCUS, a repeated Pap smear was positive for ASCUS in 200 (Yalti et al., 2005). In a series of 103 patients with ASCUS at Imam Khomeini Hospital, the Pap smear was repeated in 60 patients and was normal in 7.11%, ASCUS in 75%, and squamous intraepithelial lesions (SIL) in 3.13% (Melnikow et al., 1995). In another series of 112 ASCUS cases undergoing a repeat Pap smear, 78% were normal, 5.12% were ASCUS, 5.4% were LSIL, 8.1% were high-grade squamous intraepithelial lesions (HSIL), 8.1% were SCC, and 9.0% were adenocarcinomas (Allameh et al., 2009). In one study, the sensitivity of the Pap smear was only 51% and the sensitivity of this test after three tests remained 8.86% (Berek, 2005). In our study, the sensitivity of the Pap smear was 15%. Perhaps the low sensitivity of the Pap smear at our center is due to mistakes in preparing samples, fixation, and reporting.

Considering false-negative Pap smears and the failure of patients to have routine Pap smears repeated every 4-6 months, the Pap smear is a weak diagnostic method. As about 50% of these patients undergo colposcopy for abnormal results, it makes the cost of the first diagnostic procedure roughly equal to the cost of immediate colposcopy (Berek, 2005). In previous studies, a biopsy was taken only if there was an abnormal appearance on colposcopy, while in this study because of the high prevalence of CIN in the anterior lip of the cervix, two separate biopsies were taken from the anterior lip of the cervix from all 156 cases with a normal appearance on colposcopy, and seven cases were reported as CIN1. In another study of 200 biopsies for ASCUS that was confirmed on repeat Pap smear, there were 160 cases of chronic cervicitis, 36 CIN1, and two patients with CIN2 and CIN3. That study stated that a repeat Pap smear was better than colposcopy, because of the high prevalence of cervicitis in their patients. In a study of ASCUS Pap smears performed at the Imam Khomeini Hospital, biopsy and endocervical curettage showed LSIL in 14 cases, HSIL in 16, and invasive carcinoma and endometrial carcinoma in one case each (Melnikow et al., 1995). In a study of 86 patients with abnormal colposcopy, Allameh et al. reported that 83.7% were normal, 7% had LSIL, 5.8% had HSIL, and 3.5% had cancer of cervix (Allameh et al., 2009).

In our series, 193 (90.6%) cases were negative for neoplastic lesions and 20 (9.4%) cases had epithelial and neoplastic lesions; of the former, 67.6% had cervicitis, while in the second group, there were 16 cases of CIN1, two cases of CIN2, and two cases of squamous cell carcinoma. Endocervical curettage reported 123 (57.7%) cases as normal, neoplastic lesions in 11 (5.2%) cases, and unsatisfactory findings in 79 (37.1%) cases (e.g., thrombus or mucus). Because endocervical curettage diagnosed 11 neoplasms, its sensitivity was 64% and specificity was 100%.

In a similar study conducted in Iran, Ghaemmaghami et al. (2005) reported a sensitivity of 91% and specificity of 13% based on ASCUS results and a sensitivity of 24%

and specificity of 92% according to LSIL for repeat Pap smear. Age above 35 years and a positive biopsy were significantly related in another study (16), while in our study, age and the biopsy results were not related ($P = 0.08$). Patient age and the Pap smear predict dysplasia and may be helpful for selecting patients with low prevalence of dysplasia requiring colposcopy.

In conclusions, because cervical cancer is the most common gynecological cancer in developing countries and given the low accuracy of the Pap smear in this study and the need for an early diagnosis of cervical cancer, a cervical biopsy and colposcopy are recommended in patients with ASCUS. Even colposcopy and endocervical curettage alone are better diagnostic tools than a repeat Pap smear.

References

- Allameh T, Afsharmoghadam N (2009). Management of atypical squamous cell on cervical cytology. *Iran J Gynecol Oncol*, **2**, 43-53.
- American Cancer Society (2004). Cancer Facts and Figures. Asp Accessed June 6.
- Berek JS, Hacker NF (2005). Practical Gynecology Oncology. Lippincott Williams & Wilkins, 4th ed.
- Ghaemmaghami F, Ensani F, Behtashn, et al (2005). Pap smear with atypical squamous cells of undetermined significance. *Arch Iranian Med*, **8**, 192-6.
- Karimi Zarchi M, Akhavan A, Gholami H, et al (2010). Evaluation of cervical cancer risk factors in women referred to Yazd-Iran Hospital from 2002 to 2009. *Asian Pac J Cancer Prev*, **11**, 537-8.
- Koatsky LA, Holmes KK, Gritchow CW, et al (1992). A cohort study of the risk of cervical intraepithelial neoplasia grade 2 or in relation to 10 papilloma virus infection. *N Engl J Med*, **327**, 1272-8.
- Krivak THC, Macbroom JW, Elkas JC (2007). Cervical and Vaginal Cancer. In: Berek JS, editors. *Novak's Gynecology*. 14th ed. Philadelphia: Williams and Wilkins.
- Ley C, Bauer HM, Reingold A, et al (1991). Determinants of genital human papillomavirus infection in young women. *J Natl cancer Inst*, **83**, 997-1003.
- Melnikow J, Nuovo J, Willan AR, et al (1995). Natural history of cervical squamous intraepithelial lesions: a meta-analysis. *Obstet Gynecol*, **172**, 946-54.
- Moy M, Zhao M, et al (2010). Human papillomavirus testing and cervical cytology in primary screening for cervical cancer among women in rural China: comparison of sensitivity, specificity, and frequency of referral. *Int J Cancer*, **127**, 646-56.
- Ota T, Takeshima N, Tabata T, et al (2007). Treatment of squamous cell carcinoma of the uterine cervix with radiation therapy alone: Long-term survival, Late complications, and incidence of second cancers. *Br J Cancer*, **97**, 1058-62.
- Sardi J, Boixadera M (2004). A critical overview of concurrent chemoradiotherapy in cervical cancer. *Curr Oncol Reports*, **6**, 463-76.
- Sawaya GF, Grimes DA (1999). New technologies in cervical cytology screening: a word of caution. *Obstet Gynecol*, **94**, 307-10.
- Spensley S, Hunter R, Livsey J, et al (2009). Clinical outcome for chemoradiotherapy in carcinoma of the cervix. *Clin Oncol*, **21**, 49-55.
- Yalti S, Coubuz B, Bilgic R, et al (2005). Evaluation of cytologic screening results of the cervix. *Int J Gynecol Cancer*, **15**, 292-4.