Are the University Hospitals in Puerto Rico following Current Guidelines for Cervical Cancer Screening?

Keimari Méndez, MD; Nilmar Rodríguez, MD; Isalis Sánchez, MD; Yolianne Lozada, MD; Idelvais Piñero, MD; Dora Donate, MD; Josefina Romaguera, MD

Objective: Cervical cancer is the fifth most common cancer among women in Puerto Rico (PR). Information about which obstetricians and gynecologists in PR are following current cervical cytology guidelines is not available. Our two objectives were to determine whether current guidelines for abnormal cervical cytology management were being followed adequately by OB-GYN residents and faculty at 3 university hospitals and, in addition, to evaluate the knowledge of the current guidelines that is possessed by these individuals.

Methods: A retrospective medical record review (records from January 2009 through December 2010) of patients with abnormal cervical cytology results (n = 166) to evaluate the management they were given and a cross-sectional survey of OB-GYN residents (n = 34) and faculty (n = 46) to evaluate their knowledge of cervical cytology guidelines were both performed.

Results: One hundred and sixty-six medical records were reviewed. The level of management for 45% of the patients was found to have been optimal."Thirty-three percent were lost to follow-up. Eleven percent of the patients were managed sub optimally and the management of 12% of the patients was considered to have been poor. The survey showed that the faculty were less updated with regard to current guidelines for the management of cervical cytology than were the residents. Study limitations were the lack of electronic medical records in the hospitals—which makes access to patient information more difficult—and the low response rate of the faculty.

Conclusion: OB-GYN physicians and residents were not consistent with their management, according to current guidelines, of cervical cytological abnormalities. The high-risk nature of the patients and their poor adherence to treatment (loss to follow-up) may have been the cause of this inconsistency. Meetings aimed at addressing the lack of compliance by local OB-GYN physicians with the guidelines for cervical cancer screening have been Better screening strategies are also needed if we are to improve patient compliance in our population. [*P R Health Sci J 2015;34: 142-147*]

Key words: Abnormal cytology, Guidelines, Cervical cancer screening

Cervical cancer is the fifth most commonly diagnosed cancer among women in Puerto Rico (PR). Around 50 women in P R die each year from cervical cancer. The age-adjusted incidence calculated from 2006 through 2010 was 11.5 per 100,000 women each year, compared to 7.9 in the general United States (US) population and 10.9 in the population of US Hispanics in 2009. Only 56% of the cases that were reviewed were diagnosed at early/localized stages, which resulted in a mortality rate of 2.3 per 100,000. This compares to the 2009 US mortality rates of 2.3 for the general population and 2.9 for (US) Hispanics (1, 2).

According to our preliminary studies, human papillomavirus (HPV) infection appears to be highly prevalent in PR. In fact, a recent pilot study determined that 36% of the participating women tested were positive for high-risk HPV serotypes (3). Screening tests have dramatically reduced cervical cancer cases in developed countries in the last 50 years. However, the reductions in the rates of severe cervical dysplasia and cancer are not only dependent on promoting screening tests, but also on providing appropriate treatment and follow-up to patients with abnormal cytology results and HPV infection. Studies have shown that younger physicians who are board certified

Obstetrics and Gynecology Department, School of Medicine, University of Puerto Rico Medical Sciences Campus, San Juan, PR

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Address correspondence to: Keimari Méndez, MD, MSc, Assistant Professor and Residency Program Director, Department of Obstetrics and Gynecology, University of Puerto Rico Medical Sciences Campus, P.O. Box 365067, San Juan, PR 00936-5067. Email: keimari.mendez@upr.edu

and practicing in large, multispecialty settings are more likely to conform to guidelines, showing relatively higher levels of preventive care (4). The American Society for Colposcopy and Cervical Pathology (ASCCP) has published a widely cited set of guidelines for cervical cancer screening, which guidelines have been endorsed by other professional organizations, including the American College of Obstetricians and Gynecologists and the American Society for Clinical Pathology. New guidelines regarding the initiation of cervical cancer screening, abnormal cytology management, and HPV testing and screening intervals were developed in 2006 and updated in December 2009. Additional changes were incorporated in 2012 (5). No information is available regarding the adequacy of management in patients with abnormal cervical cytologies in PR. For many years the initiation of cervical cytology screening in adolescents took place 3 years after having become sexually active or at 21 years, whichever came first. The new guidelines do not recommend screening until 21 years, regardless of age of sexual debut. Nevertheless, many physicians are reluctant to follow that particular guideline, as HPV testing tends to form an integral part of those cervical cancer screening programs that make use of the established screening guidelines. Moreover, the recommendation for women between 21 and 30 years old is that HPV testing not be used in primary screening, instead being implemented for the evaluation of certain cervical lesions (such as ASCUS) identified on the basis of cytology. In women over 30 years, HPV testing may be used both for the evaluation of cervical lesions and for screening. In addition co-testing with cervical cytology and HPV testing every 5 years is preferred. HPV testing is now included for the management of atypical glandular cytology, for follow-up after treatment for cervical intraepithelial neoplasia, and in combination with cytology screening in women 30 years and older (6). In 2006, Irwin et al reported that in a study evaluating cervical cancer prevention in several specialties, all specialties except obstetrics-gynecology used HPV testing as an adjunct to cytology more commonly in women under 30 years of age (not recommended) than they did in women who were over 30(recommended). Misuse may stem from a lack of awareness that most infections in young women are transient and benign and that testing may lead to unnecessary interventions, such as colposcopy or invasive procedures that increase costs (7).

Although Papanicolaou (Pap) test screening is widely used, some women have never been or rarely are screened. Others continue to be screened even after they are no longer at risk for cervical cancer (5). In the US, most primary care clinicians report that cervical cancer prevention guidelines are very influential in their practices, yet surveys and observational data indicate that over-screening may be common (8). It is not known whether women in PR with abnormal cervical cytology results have been appropriately evaluated and followed, according to recent ASCCP guidelines for abnormal cervical cytology.

Our long-term goal is to improve the prevention of cervical cancer through the detection of factors affecting the success of prevention protocols. The overall objective is to determine whether the physicians from the Medical Sciences Campus of the University of Puerto Rico (UPR-MSC) in San Juan and Carolina University hospitals and those of the San Juan City Hospital (SJCH) are following the current guidelines from ASCCP. Our central hypothesis is that physicians and residents from UPR-MSC (San Juan and Carolina) and SJCH gynecology clinics are not, in fact, following current ASCCP guidelines for abnormal cervical cytology. If we find our hypothesis to be true, we will in a future study, explore the reasons that these physicians and residents ignore those guidelines, which reasons might include lack of knowledge, disagreement with said guidelines, and delays in patient evaluation secondary to healthcare system problems in PR. The rationale of our study is that it is important to know whether guidelines for the management of cervical dysplasia are being followed adequately in order to improve the success of cervical cancer prevention programs in our population. Screening is a component of prevention, but adequate medical treatment together with the follow-up of premalignant cases is the key to avoiding progression to cervical cancer.

Methods

This study consisted of a retrospective medical record review (which records were from January 2009 through 2010) of patients with abnormal cervical cytology results (n = 166) and a cross-sectional survey of obstetrics and gynecology residents (n = 34) and faculty (n = 46). Both the review and the survey were performed after the approval for the study was granted by the local IRB.

One hundred and sixty-six results of abnormal cervical cytology (with, as mentioned above, records dating from January 2009 through December 2010) were identified by the 2 pathology laboratories used by the participating institutions. The medical records were obtained and reviewed. Three university-based hospitals were included: University of Puerto Rico Carolina Hospital. University District Hospital(UPR-MSC) and San Juan City Hospital Information about demographics, follow-up visits, pap tests, HPV testing, biopsies, and procedures performed on patients with abnormal cervical cytology results were obtained from the records.

Abnormal cervical cytology results were classified according to the Bethesda system: ASCUS (atypical squamous cells of undetermined significance), ASCH-H (atypical squamous cells, cannot exclude high-grade lesion), AGUS (atypical glandular cells of undetermined significance), LGSIL (low-grade squamous intraepithelial lesion), HGSIL (high-grade intraepithelial lesion), carcinoma in situ, invasive carcinoma, or unsatisfactory for evaluation.

Adherence to management was categorized as being 1 of the 3 following: optimal, suboptimal, or poor. *Optimal* was defined as the correct procedure done within an acceptable time interval as established by the ASCCP guidelines published in 2006 and updated in 2009 (see attached document for guidelines).

Sub-optimal was defined as the correct procedure done but with significant delay.

Poor was defined as an inadequate procedure performed or time to care unacceptable.

Loss to follow-up was defined as no follow-up studies at all because a given patient didn't come back to the clinic to see her results or to have follow-up procedures done.

Presence of follow-up care is defined as a given patient's having at least 1 additional cytology or histology specimen during the follow-up period.

Timeliness of follow-up is measured in terms of the time from the initial Pap test to the appropriate follow-up study and is based on the ASCCP practice guidelines published in 2006 and updated in 2009 (see attached document for guidelines).

In view of the fact that diagnosis, management, and follow-up are completely dependent on each attending physician's knowledge, it is crucial to establish whether or not physicians are aware of current ASCCP guidelines for cervical cancer screening. Using a survey, the knowledge of OBGYN residents and faculty members from 3 university hospitals in PR with reference to the 2006 ASCCP guidelines was evaluated. The survey was designed by the primary investigator and was used for the first time in this study. The survey included 10 clinical vignettes and 5 true or false questions (see attached document). The vignettes included management guidelines for adolescents, pregnant patients, postmenopausal women, and post-hysterectomy patients; for screening intervals, atypical glandular cells (AGUS), atypical squamous cells of undetermined significance (ASCUS), and the use of HPV typing; and for when to stop screening. Information obtained from each participating physician included that physician's age, gender, category (resident or faculty), and percentage of time dedicated to outpatient gynecological practice throughout the year. The same instrument included the participant information and the vignettes. No identifiers were included in the questionnaire, to ensure confidentiality.

The OB-GYN residents and faculty members who took part in our study were associated with the following institutions:

- University District Hospital in San Juan and University of Puerto Rico Hospital in Carolina (Obstetrics and Gynecology Residency Program): a total of 31 faculty members and 20 residents
- San Juan City Hospital (Obstetrics and Gynecology Residency Program): a total of 15 faculty members and 12 residents

The study participants were residents and faculty members of the obstetrics and gynecology residency programs; no resident or faculty member was excluded from the study.

Results

We reviewed 166 cases of patients with abnormal cervical cytology results. Of these, 120 patients were pregnant (46 were not). The mean age of the patients was 24.7 years. The mean body mass index (BMI) was 26.6. The mean age at first coitus was 16.1 years. The mean age at menarche was 11.8 years. The mean number of sexual partners was 2.2. Thirty-two patients were under 21 years old. Of these 166 cases of individuals having abnormal cervical cytology results, 74 patients received an optimal level of management within an acceptable time interval, according to ASCCP guidelines (Table 1).

Table 1. Categories of management

Management	Frequency	Percent
Loss to follow-up	54	32.5
Optimal	74	44.6
Poor	20	12.0
Suboptimal	18	10.8
Total	166	100.0

In our population, abnormal pap tests were most closely associated with ASCUS, followed by LGSIL, HGSIL, atypical glandular cells, and ASC-H (Table 2). A total of 103 cases were found with pap smears showing ASCUS. Of these, 55 patients (53.4%) were receiving optimal management (Table 3). Pap smears showing findings consistent with LGSIL were seen in a total of 44 patients, of which 15 (34.1%) were receiving optimal levels of management. The majority of the patients were lost to follow-up (Table 3), meaning that those patients didn't come back for follow-up visits, resulting in the cessation of appropriate disease management. HGSIL findings on pap smears were seen in 8 patients, 4 of whom (50%) were receiving optimal management (Table 3). The pap smears of 6 patients were found to have atypical glandular cells; none of these patients received optimal management (Table 3). Only 5 cases of ASC-H were found; none of the corresponding patients received optimal management, and the majority were lost to follow-up (Table 3). The majority of patients had mild dysplasia (ASCUS and LSIL), which correlates with the incidence seen in the general population and with the natural history of HPV infection: The majority of lesions regress spontaneously before reaching the more advanced stages, such as HSIL.

Table 2. Abnormal cervical cytology distribution

Cytology result	Frequency	Percent
ASC-H	5	3
ASCUS	103	62
Atypical glandular cells	6	4
HGSIL	8	5
LGSIL	44	27
Total	166	100

The management of abnormal cervical cytology is largely influenced by the training and knowledge of the physician who is managing the case, the characteristics of the population under care, a given patient's medical insurance, and the medical resources that are available at a given clinic. In order to evaluate the knowledge of ASCCP guidelines and the management of

patients presenting abnormal cervical cytology results, a survey that included 10 clinical vignettes and 5 true or false questions was given to the residents and faculty of 3 university hospital in Puerto Rico. Thirty-four OBGYN residents answered the survey, for a response rate of 100%. Only 46 faculty members answered the survey, for a 39% response rate. Faculty and residents were asked whether they knew the ASCCP guidelines, and 100% of the faculty members answered that they did, but only 17% claimed that they were following them. Ninety-seven percent of the residents answered that they knew the ASCCP guidelines, but only 6% said that they were following them. The most common reasons for not following the ASCCP guidelines were that more aggressive treatment was needed for their high-risk population, that the patients were not consistent in their compliance, and that they (the physicians) worked primarily with special populations, such as HIV patients. Physicians in PR tend to be of the opinion that the risk for cervical cancer in their patient population is greater than that of the general population in the US, for which latter population guidelines have been previously established. PR-based Physicians apparently try to compensate for the generally poor adherence to follow-up by taking a more aggressive approach to treatment. This poor adherence is due to the lack of patient education and also due to the limitations and restrictions of the public health insurance system on the island.

Clinical vignettes were prepared to directly evaluate the participants' knowledge of ASCCP guidelines using different clinical scenarios (Table 4). Several areas were found to be deficient (35% or less answered correctly) in the participating faculty, residents, or both, and these deficiencies were as follows: (1)management of postmenopausal patients with LGSIL,(2)management of patients with AGC-NOS, (3) management of patients with ASCUS and (4) timing of screening discontinuation.

Table 3. Management-categories distribution according to cytology result

Pap result	Management categories			
	loss to follow-up (%)	optimal (%)	poor (%)	suboptimal (%)
ASCUS	28.2	53.4	12.6	5.8
LSIL	40.9	34.1	11.4	13.6
HGSIL	37.5	50.0	0.0	12.5
Atypical glandular cells	16.7	0.0	16.7	66.7
ASCH	60.0	0.0	20.0	20.0

Table 4. Percentage of correct answers to clinical vignettes

Clinical vignettes topic	% of correct answers	
	Faculty	Residents
Start screening at 21 years	39	73
HPV testing after LGSIL	50	50
Screening interval after abnormal result	50	69
ASCUS management	29	42
Postmenopausal women with LGSIL	18	12
Management during pregnancy	47	68
AGC-NOS	18	15
Screening discontinuation	35	39

Conclusion

Screening, the management of abnormal cytology, and counseling methods have all been transformed by the new HPV tests and testing guidelines. Although many patient factors are associated with screening, and adherence to same, physician recommendation is one of the strongest predictors of success in terms of screening for cervical cancer. By recommending such preventive services to their patients, primary care physicians play a central role in implementing the screening guidelines of major professional organizations. Having this information will help us to reach the medical community involved in cervical cancer prevention and promote guideline adherence, which in turn will increase the success of cervical cancer prevention. This will minimize the potential negative effect of screening, in that it sometimes leads to unnecessary referrals for colposcopy, the negative effect on future pregnancy outcomes, and undiagnosed cervical cancer (4). Educational interventions aimed at improving the outcome of cervical cancer screening in Puerto Rico have already been initiated. In August of 2012, a workshop about the latest screening guidelines was given in the local annual conference for OBGYN physicians, "Sunshine Seminar." In addition, workshops and conferences have been given to residents as part of their academic curricula.

A limitation of the study was the lack of electronic medical records in the 3 hospitals, which lack makes accessing patient information both more difficult and more time consuming, as well as introducing a level of uncertainty into the reliability of the information contained in each record. Another limitation was the low response rate of the faculty members to the survey. This might be explained by their apparent resistance to following the guidelines.

Future educational interventions for both practitioners and patients should address not only knowledge of current guidelines but also ways to improve adherence to screening programs for cervical cancer. These issues will continue to be a challenge, given the continuous changes in the guidelines for cancer management. Guidelines for cervical cancer screening changed again 3 months after our study analysis was completed in 2012 (5) Better screening strategies also need to be developed in order to improve patient compliance in our population, given that loss to follow-up is one of the principal causes of delays in treatment, diagnosis, or both in our population. Implementing less invasive and uncomfortable screening tests, such as self-sampling methods (vaginal or urine), might be one way to improve the adherence of patients to cervical cancer screening programs. If we can eliminate some of these limitations and improve the loss to follow-up portion of patients, we should be able to bring the rate at which we are providing an optimal level of management to above 70%.

APPENDIX A- Survey provided to physicians

New ASCCP Guidelines adherence for abnormal cervical cytology in three University Hospitals in Puerto Rico

1) Position: _____ Ob-Gyn Resident (n=32) _____ Ob-Gyn Faculty (n=46)

2) Age: _____

3) Gender: _____ Female _____ Male

4) Amount of Outpatient Clinical Gynecological practice (% dedicated in a 12-months based time frame)
_____0% _____ 1-25% _____ 26-50% _____ 51-75% _____ 76-100%

5) Do you know the 2006 ASCCP guidelines and 2009 update for abnormal cervical cytology management? Yes _____ No_____

6) Do you consider that you follow the ASCCP guidelines to manage your patients with abnormal cervical cytology? Yes _____ (Go to next page) No _____

7) Explain the reasons you have for not following the ASCCP guidelines.
_____
_____

Considering the current ASCCP guidelines since 2006 and updated in 2009, please answer TRUE or FALSE for each of the following questions.

1) Cervical cancer screening should start 3 years after starting sexual activity or at 21 years old, whatever comes first.
TRUE___ FALSE___

2) A 30 year old obese female is evaluated at your office with routine Pap smear and results showed atypical endocervical cells. This patient needs colposcopy with endocervical and endometrial sampling.
TRUE___ FALSE___

3) A 32 year old female G2P2 with negative cervical cytology and negative HPV testing can be followed with routine screening in 3 years.
TRUE___ FALSE___

4) A 18 year old female with LGSIL on Pap smear can be evaluated with HPV testing to decide if colposcopy is necessary to rule out severe dysplasia.
TRUE___ FALSE___

5) 28 year old G3P3 is found with ASC-H in Pap smear. A colposcopy is performed and is negative for CIN II/III. She can be back to routine screening.
TRUE___ FALSE___

Considering the current ASCCP guidelines since 2006 and 2009, please select the best answer for each of the following clinical scenarios.

1) 29 y/o G2P2 with routine liquid based cytology screening showing atypical squamous cells of undetermined significance (ASC-US). The preferred management approach:
a) Colposcopy b) Repeat cytological exam at 6 months c) Reflex HPV DNA testing for high risk type
d) All of the above e) None of the above

2) 29 y/o G2P2 with ASC-US, HPV typing + for high risk types. Satisfactory colposcopy and ECC done with no evidence of cervical intraepithelial neoplasia (CIN). The best next step in management is:
a) Repeat cytology in 3 months b) Repeat cytology at 6 and 12 months or HPVDNA testing at 12 months c) Cryosurgery
d) Any of the above e) None of the above

3) 63 y/o G3P3 with no previous history of dysplasia. Liquid based cytology done 3 weeks ago showed LSIL. The best next step in management may include:
a) Reflex HPV DNA testing b) Repeat cytological testing at 6 and 12 months c) Colposcopy
d) Any of the above e) Cytology in 3 months after vaginal Premarin

4) 25 y/o G1P0 with pregnancy at 16 weeks of gestation is found with LSIL for the first time. A colleague of yours decided to defer initial colposcopy until at least 6 weeks postpartum. What can be said about this?
a) Your colleague is following the preferred option b) Your colleague is committing malpractice c) Your colleague is doing an acceptable option
d) Your colleague should perform a colposcopy at every trimester e) None of the above

5) 17 y/o nulligravid with history of rape at 15 y/o, under state custody. Referred to you due to a cytology done 4 weeks ago showing HSIL. Satisfactory colposcopy and ECC showed no evidence of CIN. The best next step in management is:
a) Observation with colposcopy and cytology b) Perform LEEP c) Perform cold knife conization
d) Cryosurgery e) Any of the above

6) 28 y/o G2P2 with 2ry infertility, obesity, and menometrorrhagia with liquid based cytology showing AGC-NOS. You perform a satisfactory colposcopy, ECC, and endometrial sampling without evidence of CIN or glandular neoplasia. HPV+ for high risk. The best next step in management may include:
a) Repeat colposcopy and cytology at 6 months b) Repeat cytology and HPV typing at 6 months c) Perform a diagnostic excisional procedure
d) Repeat cytology and HPV typing at 12 months e) Any of the above

7) 31 y/o G3P3 with persistent HPV positive after one year of follow up. She had negative cytology now and one year ago. The best next step in management may include:
a) Repeat cytology and HPV at 12 months b) Repeat cytology and HPV at 6 months c) Routine screening at 36 months
d) Colposcopy e) Cryosurgery

8) According to the American Cancer Society:
a) Cervical cancer screening should be stopped at age 65 in patients without risks factors
b) Cervical cancer screening may be stopped at age 70 in patients with no abnormal test results in the last 5 years
c) Cervical cancer screening may be stopped at age 70 with 3 negative Pap smear in a row and no history of abnormal results in the last 10 years
d) Cervical cancer screening may be stopped at age 65 with 3 negative Pap smear in a row and no history of abnormal results in the last 10 years
e) None of the above

9) A 48-year old woman, G4P2A2, had a vaginal hysterectomy for prolapse 1 year ago. Cervical pathology testing revealed cervicitis. Findings of her Pap tests over the past 10 years have been normal. What is the appropriate next step in management?
a) Perform a Pap test at this visit b) Perform a Pap test in 4-6 months c) Perform a Pap test in 1 year
d) Perform a Pap test in 2-3 years e) No further need for a Pap test at this or future visits

10) A 19-year-old woman presents for contraceptive counseling and annual testing for sexually transmitted diseases. Her first vaginal intercourse was at age 17 years. She has never had a Pap test.
a) Perform a Pap test at this visit b) Perform a Pap test in 4-6 months c) Perform a Pap test in 1 year
d) Perform a Pap test in 2 years e) No further need for a Pap test at this or future visits

Resumen

Objetivo: El cáncer cervical es el quinto más común en mujeres puertorriqueñas. No hay información sobre la adherencia de los ginecólogos a las guías de manejo de citología cervical en Puerto Rico. Nuestro objetivo fue determinar si las guías se están siguiendo en las clínicas de ginecología del Recinto de Ciencias Médicas (San Juan y Carolina) y el Hospital Municipal de San Juan, así como el conocimiento de las mismas. Métodos: Revisión retrospectiva de expedientes médicos con resultados alterados de citología cervical desde enero 2009 hasta diciembre 2010 (n=166) para evaluar el manejo. Además, se realizó una encuesta a residentes y facultad de Obstetricia y Ginecología para evaluar el conocimiento de las guías. Resultados: Se revisaron 166 expedientes médicos. Manejo óptimo, sub-óptimo y pobre, fue ofrecido al 45%, 11% y 12% de las pacientes, respectivamente. Por otra parte, el 33% de las pacientes faltaron a su seguimiento. Según los cuestionarios, la facultad está menos actualizada que los residentes. La falta de record electrónico en los hospitales, lo cual limita el acceso a la información, y la pobre respuesta de la facultad al cuestionario, fueron limitaciones del estudio. Conclusión: Los residentes y facultad no fueron consistentes en el manejo de citologías anormales. Esto puede deberse a que nuestra población es una de alto riesgo y con pobre adherencia al tratamiento médico, por lo tanto, el manejo se ve alterado. Estrategias de intervención educativa se han comenzado con los ginecólogos de PR localmente. Mejores estrategias de cernimiento son necesarias para mejorar la adherencia al manejo en nuestra población.

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