Conflict of interest

The authors have no conflicts of interest.

References


Fluorescein sodium as a contrast agent for colposcopy☆

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A R T I C L E  I N F O

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Despite the long history of using acetic-acid staining in colposcopy, there are limitations associated with this procedure. By way of example, this diagnostic routine is associated with a high rate of false-negative and false-positive results. Previous studies have estimated false-positive rates of 4%–33% and false-negative rates of 40%–62% [1]. In addition, the acetic-acid solution must be applied repeatedly to maintain the acetowhite changes necessary for improved visualization.

When using acetic acid as a staining agent, the accuracy of colposcopy in distinguishing low-grade lesions from high-grade lesions and cancer remains low, indicating that a significant number of women could be over-treated or under-diagnosed [2]. A recent analysis of more than 47,000 women found that, in patients who did not have a visible lesion on colposcopy, a random biopsy performed at the squamocolumnar junction resulted in an approximately 20% increase in the incidences of cervical intraepithelial neoplasia grade 2 or worse, and cervical intraepithelial neoplasia grade 3 or worse, detected in patients [3].

Previous research has demonstrated that fluorescein sodium (FNa) accumulates preferentially in malignant tissue compared with normal tissue (Fig. 1) [4]. This finding motivated the present study, which explored the utility of this dye as a contrast agent during colposcopy for the identification of abnormal cervical tissue.

The institutional review board at Harbor-UCLA Medical Center approved the study design and all patients provided written informed consent for participation. The present study enrolled 34 patients with anomalous cervical smear test results between April 1 and September 30, 2015 at the Abnormal Cytology Clinic at Harbor-UCLA Medical Center. Patients were excluded if they were younger than 15 years old, older than 70 years old, were pregnant or experiencing menses at the time of the study, or had a history of hypersensitivity, allergies to FNa, or asthma. Patients were instructed to abstain from sexual intercourse for seven days prior to scheduled colposcopy. Additionally, each patient was screened for vaginal infections prior to colposcopy and patients with signs and symptoms of infection were excluded. Patients were evaluated by colposcopy using acetic-acid staining. The cervix was then washed with normal saline and a topical application of FNa solution (3 mg FNa in 5 cm³ saline) was applied. Standard diagrams of the cervix were used to map the staining patterns. Biopsies were then obtained based on the findings of acetic-acid staining.

In patients identified by cervical smears as having high-grade squamous intraepithelial lesions, 100% of patients with positive results from FNa staining, compared with 85.7% of patients with positive results from acetic-acid staining, had high-grade lesions detected at biopsy. Additionally, in patients identified by cervical smears as having low-grade squamous intraepithelial lesions, 42.8% of patients with positive results from FNa staining, compared with 25% of patients with positive results from acetic-acid staining, had high-grade lesions detected following biopsies. In patients with negative results following FNa staining, 0% had high-grade lesions detected by biopsy, 25% had low-grade lesions detected, 58.3% had chronic cervicitis, and 8.3% showed no pathology.

It appears that using FNa as a contrast agent results in greater accuracy in detecting high-grade lesions than using acetic acid. Large prospective trials are needed to validate the use of FNa in detecting cervical pathology.
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References


