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Abnormal colposcopic images in patients with pre-invasive cervical lesions

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ABSTRACT

Introduction: The objective of the study was to determine frequency and to compare frequency of the abnormal colposcopic images in patients with low and high grade pre-invasive lesions of cervix.

Methods: Study includes 259 patients, whom colposcopic and cytological examination of cervix was done. The experimental group of patients consisted of patents with pre-invasive low grade squamous intraepithelial lesion (LSIL) and high grade squamous intraepithelial lesion (HSIL), and the control group consisted of patients without cervical intraepithelial neoplasia (CIN).

Results: In comparison to the total number of satisfactory findings (N=259), pathological findings were registered in N=113 (43.6 %) and abnormal colposcopic findings in N=128 (49.4%). The study did not include patients with unsatisfactory finding N=22 (8.5%). Abnormal colposcopic image is present most frequently in older patients but there are no statistically important difference between age categories (Pearson Chi-Square 0.47, df -3, p=0.923). Frequency of abnormal colposcopic findings (N=128) is the biggest in pathological cytological (N=113) and HSIL 58 (45.3%), LSIL 36 (28.1%). There is statistically significant difference in frequency of abnormal colposcopic images in patients with low-grade in comparison to patients with high-grade pre-invasive cervix lesions (Chi-Square test, Pearson Chi-Square 117.14, df-12 p<0.0001).

Conclusion: Thanks to characteristic colposcopic images, abnormal epithelium is successfully recognized, but the severity grade of intraepithelial lesion cannot be determined.

Keywords: Abnormal colposcopic images, pre-invasive cervix lesion.

INTRODUCTION

Organized screening programs protect against cervical cancer by identifying women with abnormal cytological findings for further review by colposcopy and cervical biopsy, and possibly surgical removal of histological verified cervical intraepithelial neoplasia (CIN), a higher grade, as a precursor of cervical cancer (1).

Cervical intraepithelial neoplasia (CIN), are the changes limited to the epithelium, which means that there is no invasion of the stroma, basal membrane is preserved, and there is a lack of infiltration (2, 3). Thanks to the simplicity and reliability of the Pap test screening cervical cancer can be detected in the

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preclinical stage of CIN / SIL (cervical / squamous intraepithelial neoplasia), when a cure is possible by locally destructive or excision methods. In most EU countries, cytological screening begins at the age of 20 and 25 years, and exceptionally 15 or 30 years, and the interval between two cytological analyses, in the case of regular findings, is usually 3 years, rarely 1 or 5 years (4).

Colposcopy is easy to perform diagnostic method that is not followed by any complications and provides plenty of elements for triage diagnosis of abnormal cytological smears during routine gynecological examinations of vulnerable female population (5).

This method provides a reliable estimate of the localization and extent of the pathological epithelial lesions, and the possible target biopsy of the suspected area. The accuracy of this method lies between 60-85%, and in combination with cytology 98-99%. The incidence of false-positive findings is estimated at 7% and a false-negative diagnosis in 13%. Colposcopy is, therefore, an excellent diagnostic complement to cytology (6).

The aim was to determine the frequency and compare the frequency of abnormal colposcopy images in patients with low and high grade pre-invasive cervical lesions.

METHODS

In this retrospective-prospective study 259 patients were analyzed in 2007 and 2011. All the patients underwent colposcopy and cervical cytology examinations. The experimental group consisted of (N=113) patients with pre-invasive cervical lesions classified by Bethesda classification, while the control group consisted of the patients with the same demographic characteristics but with cytological findings with no signs of intraepithelial lesion (N=146). Colposcopic images were analyzed in both groups, and obtained colposcopic findings were duly recorded. Experimental group with preinvasive lesions was divided into two sub-groups (N=51) with low-grade squamous intraepithelial lesions (LG-SIL), and (N=62), patients with high-grade squamous intraepithelial lesions (HG SIL). The patients with unsatisfactory cytological and colposcopic findings, as well as those patients having findings indicating an invasive carcinoma were excluded from the study.

Statistical analysis was performed by application software Statistical Package for Social Sciences for Windows, version 18.0 PASW-SPSS Inc., Chicago, IL, USA. Categorical variables will be presented as frequencies and percentages. Continuous variables will be presented as mean with standard deviation or medians with interquartile ranges, depending on the distribution of data. Normality of distribution and homogeneity of variance was checked by adequate tests. Testing for differences in the distribution of cruciate qualitative variables (independent distribution) will be expressed by chi square test. Level of significance 'p <0.05 was employed.

RESULTS

The analysis included patients (N = 259), of different age groups, which were taken smears for cytological analysis, then they underwent colposcopic examination. Abnormal colposcopic findings were found in 128 (49.4%) patients, abnormal cytological findings in 113 cases (43.6%), normal colposcopic findings in 131 (50.6%), normal cytological findings in 104 (40.2%), inflammation in 42 (16.2%). By age categories the analysis included 4 (1.5%) patients in the group <25 years, 53 (20.5%), in the category of 25-34 years, 82 (31.7%) category 35-45 years and group > = 45 years 120 (46.3%) patients (Figure 1).

The age distribution histogram shows the normal age distribution in the sample with Mean -43.27 and SD-10.16. The youngest analyzed patient was 21 years old and the oldest 78 years (Figure 2).

Abnormal colposcopic image is seen most frequently in elderly patients, but there is no significant differ-

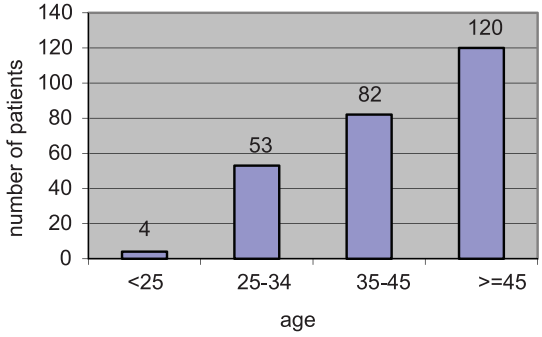

FIGURE 1. Age groups in the sample. By age categories the analysis included 4 (1.5%) patients in the group <25 years, 53 (20.5%), in the category of 25-34 years, 82 (31.7%) category 35-45 years and group > = 45 years 120 (46.3%) patients.

FIGURE 2. The age distribution histogram. The age distribution histogram shows the normal age distribution in the sample with Mean -43.27 and SD-10.16. The youngest analyzed patient was 21 years old and the oldest 78 years.

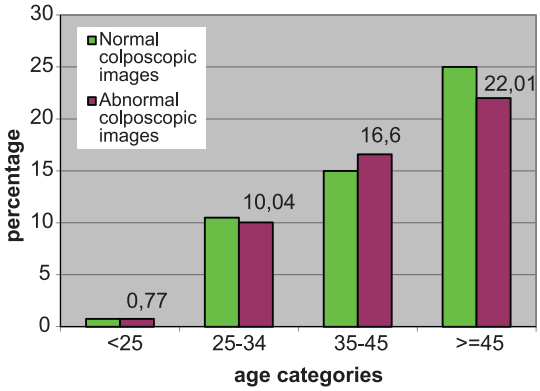

FIGURE 3. Colposcopic findings. Abnormal colposcopic image is seen most frequently in elderly patients, but there is no significant differences by age groups (Pearson Chi-Square, 0.47 df-3,(p=0.923), Kendalls tau -0.23)

ences by age groups (Pearson Chi-Syuare 0.47NS) (Figure 3).

According to the cytological finding 104 (40.40%) patients had normal findings, 42 (16.2%) patients had inflammation, 51 (19.7%) patients had squamous intraepithelial lesion low-grade LSIL, 62 (23.9%) patients had a squamous intraepithelial lesion high-grade HSIL (Figure 4). There is a significant difference in the distribution of colposcopic images by cytological findings. Most abnormal colposcopy findings are in category of cytological findings HSIL and LSIL (Figure 6).

When the colposcopic image was regular, there were mostly normal colposcopic images, and cytological and pathological findings were mostly related to inflammation, to a lesser extent LSIL and HSIL (Figure 7,8).

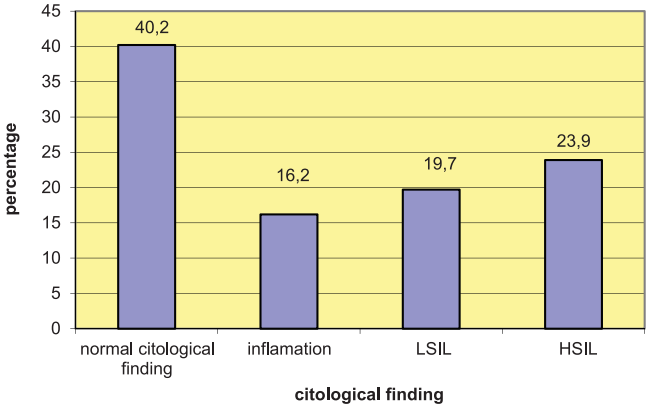

FIGURE 4. Graphical presentation of cytological findings by Bethesda classification. According to the cytological finding 104 (40.40%) patients had normal findings, inflammation had 42 (16.2%) patients, squamous intraepithelial intraepithelial lesion low-grade LSIL had 51 (19.7%) patients, a squamous intraepithelial lesion high-grade HSIL had 62 (23.9%) patients.

DISCUSSION

There were unsatisfactory colposcopic findings n=22 (8.5%), in 75% of cases it was the age group >= 45 years (N = 16), which is consistent with the works of other authors (7), and explains the ambiguous SCJ mucosal atrophy.

Analyzing the histogram of age distribution the youngest patient was 21 and the oldest 78, and the average age of patients who entered the study was 43 years which is certainly too late for optimal screening, as recommended by the "Europe Code Against Cancer".

Analyzing frequency of dysplasia changes in relation to different age groups it is concluded that the incidence of dysplasia in the age group 25-34 years (47.1%), age group 35-45 years (42.5%), age group >=45 years (43.9%), which to some extent agrees with the data of epidemiological studies according to which incidence of CIN decreases with increasing age (8).

Percentage of pre-invasive abnormal cytological findings of cervix is highest in the younger age group (30-34 years), it

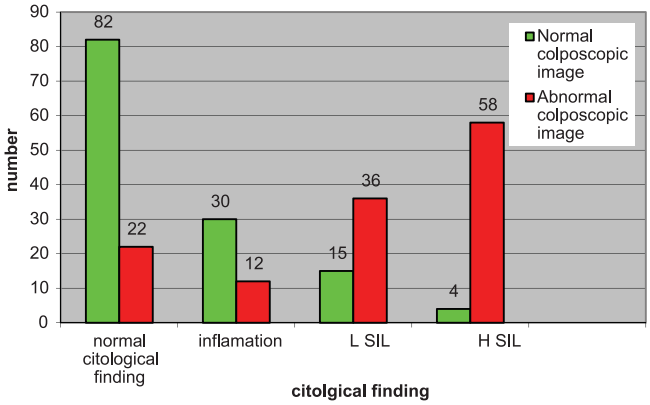

FIGURE 6. There is a significant difference in the distribution of colposcopic images by cytological findings. Most abnormal colposcopy findings are in category of cytological findings HSIL and LSIL (Pearson Chi-Square, 97.98, df-3, (p<000.1), Kendalls tau 0.54).

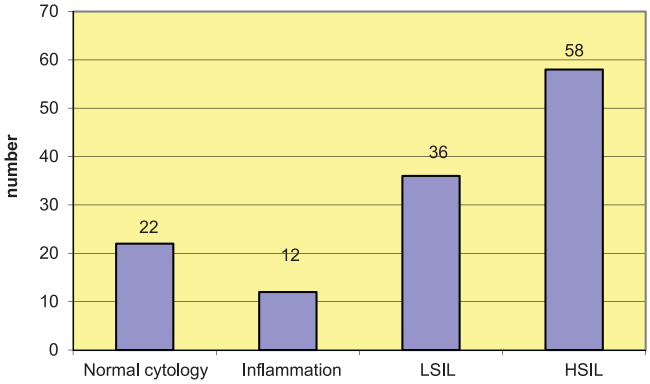

FIGURE 7. Citlogical finding. Abnormal colposcopic image

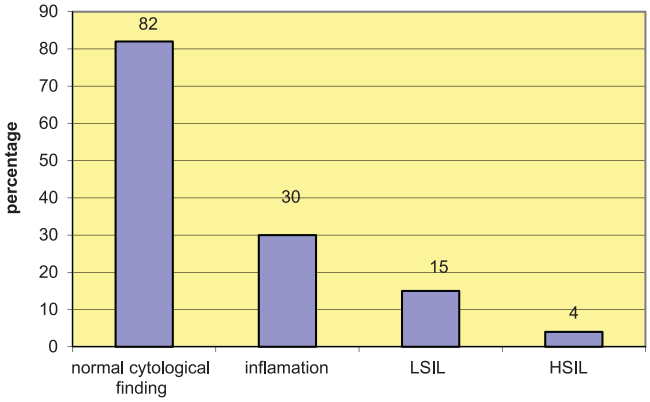

FIGURE 8. Citological findings. Normal colposcopic image. When the colposcopic image was regular, there were mostly normal colposcopic images, and cytological and pathological findings were mostly related to inflammation, to a lesser extent LSIL and HSIL.

decreases with increasing age when there is growing frequency of invasive cancer (65-74 years) (9).

Analyzing the severity of cytological lesions, of the total number of abnormal cytological findings of cervix N = 113, the largest number of patients had the least severe dysplasia, which corresponds to other studies, such as the six-year retrospective study conducted in Croatia, which included 59,901 taken cervix cytological smear (10).

Out of the total analyzed findings (N = 259), abnormal colposcopy findings found in 128 (49.4%) patients, abnormal cervix cytological findings in 113 cases (43.6%), normal colposcopic findings in 131 (50.5%), normal cervix cytological findings in 104 (40.1%), which indicates good correlation of colposcopic and cytological findings.

Abnormal colposcopy findings (N = 128) correlated with pathologic cytological finding of N = 94 (73.4%) and HSIL 58 (45.3%), LSIL 36 (28.1%). Abnormal colposcopic images are most often related to the present abnormal cytological HSIL and LSIL.

Our study cannot assess the diagnostic accuracy of cytology and colposcopy, because it is lacking histological confirmation of the lesion, as it is conducted in a study that examined the diagnostic accuracy of cytology, colposcopy and biopsy on 151 patients, when it was concluded that correct evaluation of severity of lesion requires a combination of diagnostic methods (11).

CONCLUSION

Thanks to characteristic colposcopic images abnormal epithelium is successfully detected, and a colposcopy may be used in secondary screening in the control programme of cervical cancer. Only on the basis colposcopic images one cannot determine severity of intraepithelial lesion.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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