

THE VALUE OF CYTOLOGICAL SMEAR IN EVALUATION OF HEAD AND NECK NON-MELANOMA SKIN CANCER

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Summary

Non-melanoma skin cancer is the most common malignancy in humans. Recognition of atypical tumors, recurrent tumors and multiple tumors is sometimes difficult. Cytological sampling is painless, non-invasive and accurate method, useful in skin cancer evaluation. In our study, which included 91 patient, overall accuracy of cytology in non-melanoma skin cancer was 91.2%. We find this method most useful in differentiating small benign looking lesions, in multiple skin changes and in suspected recurrent skin cancer.

KEY WORDS: *head and neck non-melanoma skin cancer, cytological smear, basal cell cancer, squamous cell cancer*

VRIJEDNOST CITOBRIŠA U PREPOZNAVANJU ZLOĆUDNIH KOŽNIH TUMORA

Sažetak

Karcinomi kože su najčešći zloćudni tumori. Točno postavljanje dijagnoze karcinoma kože otežano je kod atipičnih promjena, sumnje na recidivni tumor, te kod bolesnika s multiplim kožnim promjenama. Citobris je bezbolna, neinvazivna i točna metoda, korisna u prepoznavanju zloćudnih kožnih tumora. U naše istraživanje uključili smo 91 bolesnika liječena zbog karcinoma kože. Ukupna točnost citobrisa kod ovih bolesnika bila je 91.2%. Ova metoda posebno je korisna kod razlikovanja malih promjena dobroćudnog izgleda, kod multiplih kožnih promjena, te kod sumnje na recidiv kožnog tumora.

KLJUČNE RIJEČI: *karcinom kože u području glave i vrata, citobris, bazeocelularni karcinom, planocelularni karcinom*

INTRODUCTION

Non-melanoma skin cancer is the most common malignancy in humans and accounts for one third of newly diagnosed cancers (1). The incidence of skin cancer is increasing at a rate greater than any other cancer occurring in humans (2), and today is about 200 new cases/100000/year. Raising

number of patients is accompanied by higher number of younger patients. There is no exact data about the incidence in Croatia since the non-melanoma skin cancer is not regularly reported.

In our institution non-melanoma skin cancer is successfully treated, usually by surgical excision. Skin cancer can cause local tissue destruction and disfigurement especially in head and neck re-

gion. Local aggressiveness is major problem with basal cell cancer which is the most frequent one. Squamous cell skin cancer can spread to regional lymph nodes and other sites.

Decision to remove skin tumor is generally made after clinical examination. For experienced clinician it is easy to recognize typical skin changes and to choose best possible treatment for the patient. Recognition of atypical tumors, recurrent tumors and multiple tumors is sometimes far more difficult.

Except for skin cancer, cytology is generally accepted as diagnostic procedure in patients having malignant disease. Although not commonly employed, cutaneous cytology has become a useful tool for clinicians due to the development of simplified procedures and staining technics. Implementation of cytological techniques in diagnosis of skin tumors requires special skills of sampling and interpretation, and is not widely used (3). Cytodiagnosis of skin tumors can be performed by different techniques, including scraping, fine needle aspiration, and imprint cytology (4, 5, 6). Skin lesions are attainable for cytological sampling and cytological sampling is a relatively non-invasive method causing minimal tissue damage. The May-Grünwald-Giemsa (MGG) technique mainly, and Papanicolaou are routine procedures in specimen stains.

The cytological examination of skin scraping material was first used in the late 1940s by Tzanck in the differential diagnosis of bullous lesions. However, the scraping technique found limited applications in the diagnosis of benign skin diseases. The most common use of skin scrapes currently is in the differential diagnosis of basal cell carcinoma (BCC) from squamous cell carcinoma (SCC) and of both from benign skin lesions. Cytological scraping is a relatively non-invasive method causing minimal tissue damage. Cytological smears of non-melanoma skin cancer have recognizable characteristics. Basal cell skin cancer shows characteristic cohesive, sometimes anastomosing, usually flat sheets or clusters of various sizes, composed of small, hyperchromatic epithelial cells with scanty cytoplasm (3). Cells usually show mild nuclear pleomorphism and crowding. The nuclei are round or oval and two to three times the size of red blood cells (3, 7). Peripheral palisading is usually seen and should be sought in groups of tumor cells forming cells balls with a

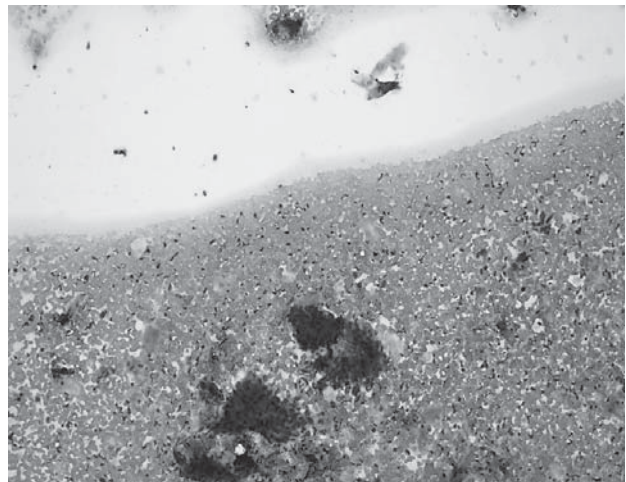


Figure 1. Cytology of basal cell cancer.

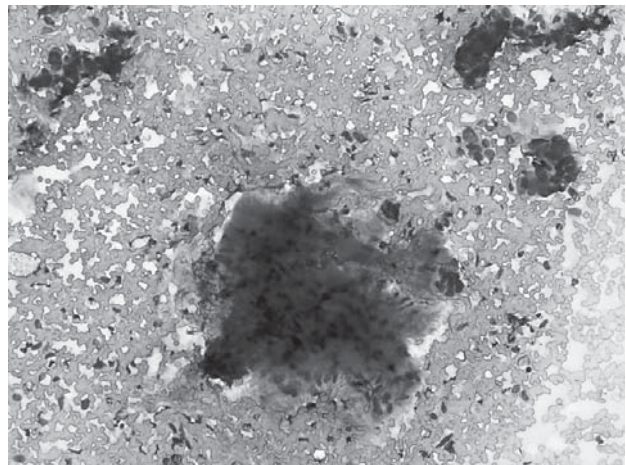


Figure 2. Cytology of basal cell cancer.

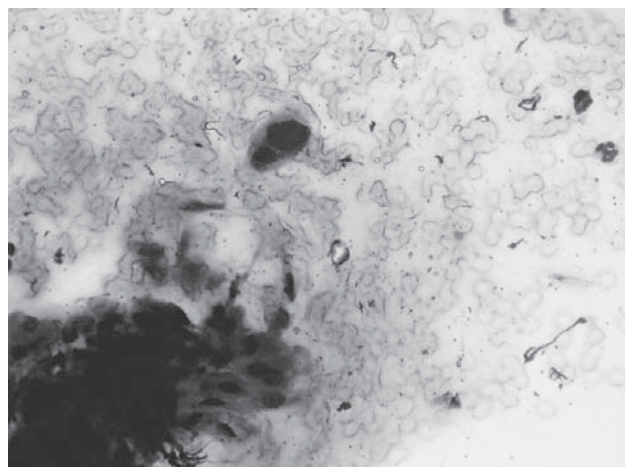


Figure 3. Cytology of squamous cell cancer.

smooth, rounded margin (3, 7, figure 1, 2). Contrary to basal cell carcinoma, squamous cell cancers have much larger cancer cells, dispersed, and forming only small, loosely structured clusters (3). SCC of the skin usually occur as shallow, indurated ulcers with irregular margins or as cauliflower like, exophytic growths. Nuclei are usually hyperchromatic but sometimes vesicular, containing nucleoli (3, 7, 8, 9, figure 3).

The aim of this study was to compare and evaluate the diagnostic accuracy of scrape cytological examination with that of histopathology of non-melanoma skin cancer (basal cell carcinoma, BCC, and squamous cell carcinoma, SCC) of the head and neck region.

PATIENTS AND METHODS

We analyzed 91 patient treated for non-melanoma skin cancer in outpatient clinic at the Department of Head and Neck Surgery at University Hospital for Tumors. All tumors were located in head and neck region.

Cytological smears were obtained by scraping the lesions with sterile scalpel blades, after skin antisepsis, directly over the skin tumor surfaces. The cells were smeared onto glass slides, air dried and stained with May-Grünwald-Giemsa stain. If thick crusts were present, they were initially abraded and discarded. The procedure is not painful and local anesthesia is not required. After cytological analysis was performed, skin tumor was surgically removed and histological diagnosis established.

Cytological diagnosis were categorized as basal cell carcinoma, squamous cell carcinoma and basal squamous cell carcinoma.

Histological specimens were obtained during surgery. Specimens were fixed in 10% formaldehyde, routinely processed and embedded in paraffin. Sections were stained with hematoxylin-eosin.

For results interpretation we analyzed contingency tables.

RESULTS

We included 91 patients with non-melanoma skin cancer. There were 72 patients with basal cell

Table 1.

ACCURACY OF CYTOLOGICAL SMEAR

Histological diagnosis	Number of patients with correct cytological diagnosis	Number of patients with incorrect cytological diagnosis	Total
Basal cell cancer	67	5	72
Squamous cell cancer	10	3	13
Basal squamous cell cancer	6	0	6
Total	83	8	91

carcinoma, 13 patients with squamous cell carcinoma and 6 patients with basal squamous cell carcinoma. Table 1. shows distribution of correctly and incorrectly diagnosed skin cancers.

Overall accuracy of cytology in skin cancer was 91.2%. Accuracy for basal cell cancer was 93.1%, for squamous cell cancer 76.9% and for basal squamous cell cancer 100%. Additional analysis showed that major problem in 5 misdiagnosed basal cell cancers was finding of normal epithelial cells. In specimens of unrecognized squamous cell

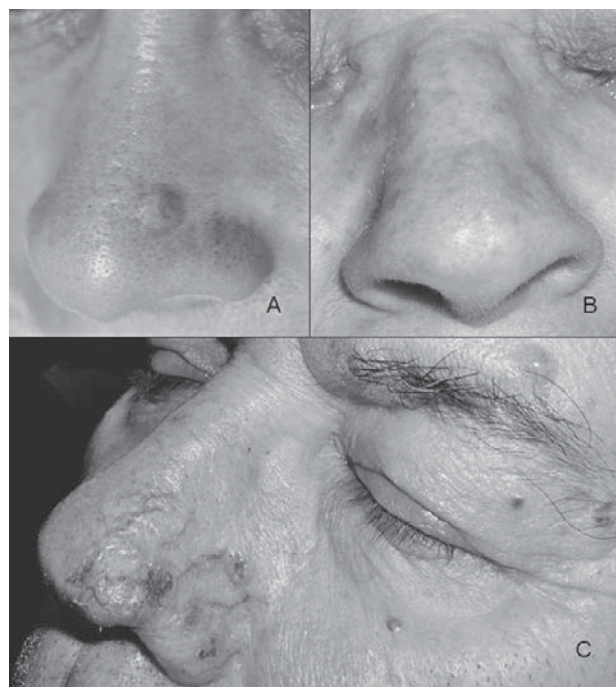


Figure 4. Clinical examples. A. Small basal cell cancer. B. Recurrent basal cell cancer after cryotherapy. C. Multiple skin tumors.

cancer major finding were atypical epithelial cells, but atypia was insufficient for diagnosis of squamous cell cancer. In cases of basal squamous cell cancer all patients were precisely diagnosed based on cytology.

Cytological scrapes were performed in all patients without complications. Procedure is almost painless so pain medication was not used. Patients had to wear light dressing for one hour.

In order to stress usefulness of this method in selected group of patients with tumors that are not so easily recognized we present several clinical examples. In those cases cytological diagnosis of basal cell cancer helped in selecting surgical treatment for the patients. First example is basal cell cancer clinically looking like benign tumor (figure 4A). Patient presented with skin tumor which was present on her skin for several years without major changes. Cytology revealed basal cell cancer, after excision histology confirmed diagnosis. Second example is patient previously treated with cryotherapy (figure 4B). She was referred to our institution for regular follow up after thyroid surgery. Clinically recurrent tumor on her nose was suspected. Cytology revealed basal cell cancer, after excision histology confirmed diagnosis. Third example is a patient with multiple skin changes (figure 4C). In this case we used cytology to choose tumors for excision.

DISCUSSION

Cytological examination is easy to perform, does not require local anesthesia, provides rapid diagnosis and can be considered, in experienced hands, accurate in the confirmation and management of suspected non-melanoma skin cancer. In our study overall accuracy of cytology in non-melanoma skin cancer was 91.2%, which is comparable with published literature (4). The high diagnostic accuracy of the diagnosing BCCs was first reported by Ruocco (8) in a study comprising 500 cases.

There are a certain limitations of cytodiagnosis that may cause problems in differential diagnosis and that should be kept in mind. Flattened or ulcerated seborrheic keratosis may be confused with BCC or SCC (7). In addition, the cytological features of premalignant lesions may show a striking resemblance to those seen in SCC. The small

cell type of SCC in particular can resemble BCC. Scraping cytology may fail in crusted, hyperkeratotic and tough cutaneous lesions and then alternate methods of obtaining material can be employed (7). The major disadvantages of using cytology alone as a diagnostic tool in the diagnosis of skin tumors is the limited capacity of this method to differentiate BCC from other adnexal tumors (e.g. trichoepithelioma). Problems can occur when elongated, spindly tumor cells are found or with melanin-pigmented lesion, variant of BCC, when melanoma is considered as differential diagnosis. In very rare type of BCC, glandular subtype, when there is a lot of mucin, it should be differentiated from adenoid cystic carcinoma. Sometimes there could be an abundant squamous component and resemble SCC.

The differential diagnosis of SCC include pilomatrixoma, maybe the most important point of cytological differential diagnosis. There is also limited capacity to differentiate SCC from keratoacanthoma because the two lesions cannot be differentiated from one another in scrape smears (3). Although keratoacanthoma is usually benign and self-healing lesions, sometimes at the moment of surgical excision part of tumor is already SCC (9).

Cytology does not give much information about tumor patterns or subtype which can be related to aggressive behavior and can be very important in further therapeutic decisions.

Cytology is especially valuable when diagnosis of non-melanoma skin cancer is not clear. There are several groups of patients we would like to address. In head and neck region some localizations demand reconstruction even for tumors smaller than 1 cm. Those regions are eyelids, nose, lip, ear and medial eye canthus. Timely established diagnosis and surgical excision in mentioned localizations leads to invisible scars and almost 100% cure rates. Second group of patients which is hard to treat are people with multiple skin changes suspect of non-melanoma skin cancer. Cytology helps in differentiating squamous cell cancer and basal cell cancer from other benign changes in surrounding skin. Third group are patients with scar changes in previously treated non-melanoma skin cancer. Those patients received various treatments (surgery, irradiation, cryotherapy or topical chemotherapeutic agents) in different time periods. In cases when patients would like to avoid treat-

ment cytological diagnosis of skin cancer can lead to easier decision for treatment.

CONCLUSION

Cytological diagnosis of non-melanoma skin cancer is valuable tool in patient evaluation, especially in differentiating small benign looking lesions, in multiple skin changes and in suspected recurrent skin cancer.

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