The usefulness of preoperative biopsy in unilateral nasal masses

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ABSTRACT

Unilateral nasal masses are considered suspicious for proliferative diseases. Several tools are routinely used to investigate unilateral lesions such as imaging and nasal biopsy. This study investigated the usefulness of nasal biopsy in predicting the actual nature of unilateral lesions. Preoperative nasal biopsy pathological results were compared with the final pathology obtained during an operation. Forty-six patients with unilateral nasal masses were included in the study group. In 40 patients the final pathology was similar to the preoperative nasal biopsy. In three patients the biopsy specimen was a benign polyp and the final pathology was of an inverted papilloma in two patients and hemangiopericytoma in one patient. In two patients the biopsy specimen was suspicious for an inverted papilloma and the final pathology was a benign polyp. In one patient the biopsy specimen was chordoma and the final pathology was osteosarcoma. The total agreement was 86.9%. The kappa value was 81.2%. Preoperative nasal biopsy is important and useful in evaluating unilateral nasal masses.

Nasal masses may represent diverse pathologies.1,2 Several characteristics help in differentiating benign from neoplastic diseases such as symptoms, gross appearance, radiological parameters, etc.3

Unilateral nasal masses are always highly suspicious for space-occupying lesions and usually are treated by surgical excision. Preoperative tissue diagnosis is recommended to plan the surgical intervention and for better patient and doctor acknowledgment of the nature of the disease.4

In our medical center we perform an office-based biopsy on every patient with unilateral nasal mass before any surgical intervention. The biopsy is performed under local anesthesia and a treatment plan is established according to the histological results.

Several studies have shown the usefulness of nasal biopsy but most of them included a heterogenic group of patients with unilateral as well as bilateral lesions who underwent the procedure.5 The aim of our study was to investigate the usefulness of nasal biopsy in predicting the actual nature of unilateral nose lesions.

MATERIALS AND METHODS

The study was approved by the Soroka Medical Center Ethical Committee. A retrospective data collection was performed on all of the patients with unilateral nasal lesions that had an office-based endoscopic biopsy and were operated on afterward.

The biopsy specimen was taken under topical anesthesia with nasal pledgets soaked in a mixture of 5 mL of lidocaine 1% and 1 mL of adrenalin 1:50,000 at an ear, nose, and throat outpatient clinic. No adverse effects of the topical anesthesia or of the biopsy were recorded. Each participant underwent endoscopic surgery as well, and the data regarding the biopsy and the final pathology results were collected and analyzed.

The pathological results of both studies were categorized into the following diagnostic groups: granuloma, hemangioma, inflammatory nasal polyp, inverted papilloma, hemangiopericytoma, squamous cell carcinoma, pyogenic granuloma, squamous papilloma of the nasal vestibule, osteosarcoma, chordoma, and olfactory neuroblastoma.

Statistics

Equal pathological results obtained from both studies were defined as concordant. Total agreement between the pathology result of the nasal biopsy and the pathology result of the surgical biopsy was calculated as the proportion of participants with concordant results from the total number of patients.

In addition, we calculated κ-statistics, which takes into consideration chance agreement between the two pathological results.6,7

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RESULTS

The study group was comprised of 46 patients (31 men and 15 women). The mean age was 48 years (range, 11–79 years). Twenty-three patients had right-side lesion.

In 40 patients the pathological result of the nasal biopsy was in concordance with the final pathology of the tissue obtained at the surgery (Fig. 1).

In six patients the biopsy specimen was not in concordance with the final pathology. In three patients the biopsy specimen was a benign nasal polyp and the final pathology was of an inverted papilloma in two patients and hemangiopericytoma in one patient. In two patients the biopsy specimen was suspicious for inverted papilloma and the final pathology was a benign polyp. In one patient the biopsy specimen was chordoma and the final pathology was postradiation osteosarcoma.

The total agreement between the nasal biopsy specimen and the final pathology was 86.9%. The $\kappa$-value was 81.2%, indicating substantial agreement.

DISCUSSION

Accurate diagnosis of unilateral nasal lesions is important both in terms of preoperative workup and in treatment planning. Han et al. investigated 521 nasal biopsy specimens and found sensitivity and specificity of 43.7 and 98.9%, respectively, for malignant tumors and 78.2 and 96.2%, respectively for benign tumors.\(^5\) A combination of endoscopic biopsy and preoperative imaging yielded higher results. Tabae et al. examined 25 patients and compared the biopsy specimen to the final pathology. The sensitivity of the biopsy specimen was 71% and the specificity was 93%.\(^6\)

Unilateral nasal lesions are always more suspicious for neoplastic pathologies and, hence, preoperative information on the nature of the lesion is of extreme importance. Imaging studies like computerized tomography and magnetic resonance imaging can contribute to the preoperative evaluation on the extension of the lesion. However, malignant lesions, especially in early stages can cause no radiological signs of malignancy (such as bone erosion or orbital involvement) and, on the other hand, benign diseases can initially imitate aggressive pathologies (e.g., allergic fungal sinusitis).

Every patient with a space-occupying lesion of the nasal cavity must be carefully evaluated. Clinical examination and radiological studies should be performed to exclude skull base defects such as meningocele or vascular lesions that are contraindications for an ambulatory biopsy.

Nevertheless, office-based biopsy of a nasal lesion taken deep in the tissue, demands good local anesthesia and patient cooperation. We found that the overall accuracy of ambulatory office-based biopsy of unilateral nasal lesions is very high, approaching the accuracy that we expect from other tissue sampling such as parotid and thyroid fine-needle aspirations.\(^9,10\)

Several explanations were suggested for false diagnosis in ambulatory biopsy of nasal masses such as superficial sampling, swelling of the surrounding mucosa that obscure the true lesion, or the use of forceps that crushes the tissue and changes the natural histological structure of the biopsy specimen. Additional
studies are required to investigate the optimal method of tissue sampling in nasal lesions.

CONCLUSION

Tissue diagnosis in patients with unilateral nasal lesions is important in treatment planning. Nasal biopsy is a reliable tool and should be performed routinely as part of the preoperative workup of those patients. Methods to improve the yield of nasal biopsy should be further investigated.

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