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Original Research Article

Image guided biopsy/FNAC in head and neck cancers in covid 19 pandemic

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ABSTRACT

Background: Suspected growth in the region of base of tongue, pharynx, and larynx need direct/indirect laryngoscopy for establishing Diagnosis and for Staging of the disease. The Covid 19 Pandemic has severely affected these modes of examination because they are Aerosol Generating Procedures and carry very high risk of transmission of the Virus. The Department of Head And Neck Oncosurgery at KCHRC is one of the busiest department at our Institute with an average annual footfall of around 20,000 new patients. The main objective of our study is to know the role of Image Guided Biopsy/FNAC for primary diagnosis in Head and Neck Cancers.

Materials and Methods: Retrospective analysis of prospectively collected data of 35 patients was done from April to September 2020. Histopathological records along with patient's clinical records were reviewed.

Results: Of the 35 patients, 23 patients underwent CT Guided biopsies, 11 patients had CT Guided FNA and one patient had USG guided biopsy. In 23 patients (CT Guided Biopsy), the biopsy was taken from tongue in 16 patients, Larynx in two patient, Pyriform sinus(PFS), posterior pharyngeal wall, RMT (retromolar trigone), lower GBS and Tonsil sites had one patient each. Of the 11 CT Guided FNAC patients, the site of FNA was from PFS in 7 patients, Tongue in 2 patients RMT and soft palate had one patient each. One patient had undergone USG Guided biopsy for PFS lesion. Out of 35 patients, tissue specimen taken was adequate in 33 patients and inadequate in two patients. The results were supported both histologically and clinically. The histological confirmation was found in 88.6% cases (31/35), squamous cell carcinoma was found in 74.3% cases (26/35), no malignancy in 8.5% cases(3/35), no specific lesion in 5.7% cases(2/35), no definitive diagnosis in 2.8% cases(1/35) and in inadequate in 8.5% cases(3/35). Repeat biopsy in one patient revealed no malignancy. There were no post procedure complications noted.

Conclusion: Image guided biopsy/FNAC is a safe, reliable minimally invasive technique and can be used for primary diagnosis of Head and Neck cancers without the risk of Aerosol generation in the current Covid -19 Pandemic.

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1. Introduction

Head and Neck Cancers (HNCs) are the most commonly diagnosed cancers worldwide¹ and in India. Cancer patients are more vulnerable to COVID -19 infection. In view of recent pandemic (COVID-19) situation worldwide and

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rapidly escalating situation in India as well has led to adaptation or modification of oncology practices and protocols. The aim is to reduce risk to patients and hospital staff. Cancers of the Head and Neck like oral cavity, pharynx, larynx, oropharynx often include Direct/Indirect laryngoscopy in their diagnostic work up. Depending on the location of growth, Direct/Indirect laryngoscopy helps to visualise the disease extent and to get biopsy of suspected growth for primary diagnosis.

During COVID-19 pandemic, adherence to previously established standards of care have proven difficult.²

In the initial phase of lockdown in India, there were no standard protocols from National/International cancer associations or by the Indian Medical Association. So, in our institute we made few modifications for the primary diagnosis of Head and Neck cancers. One of them was the use of Image guided biopsy/FNA in place of Direct laryngoscopy which carries a significant risk of aerosol generation. General anaesthesia can usually be avoided in CT-guided tissue sampling. Local anaesthesia or moderate sedation is sufficient for alleviating pain and discomfort for most patients. CT-guided biopsy is also associated with less tissue trauma.

Given the advantages, proficiency with CT-guided sampling of head and neck lesions is becoming an expected skill set of the well-trained radiologist. A sound understanding of the relevant anatomy with specific knowledge of key vascular structures and nerves is therefore critical before one attempts a CT-guided procedure for the Head and Neck lesion. Certain important technical considerations related to technique can help increase the yield of the sample. In certain situations, specific techniques, such as modification of the head position and opening the jaw, can be helpful in accessing many sites in the Head and Neck.

The preferred method of tissue sampling should be determined before the procedure. FNA is less traumatic than core needle sampling and often yields a sufficient sample for tissue diagnosis. However, core needle biopsy has been found to result in more accurate sampling in certain scenarios. In many cases it is appropriate to perform FNA first with a cytopathologist present and then to proceed with core needle sampling if the cytologic samples are not sufficient for diagnosis.

The main objective of our study is to know the role of Image Guided biopsy/FNAC to diagnose Head and Neck Cancers in selected patients in our institute during this pandemic.

2. Materials and Methods

Retrospective analysis of prospectively collected data of 35 patients was done from April to September 2020. Histopathological records along with patient's clinical records were reviewed.

2.1. Sampling techniques

Coaxial technique is preferred for both FNA and core biopsy sampling. After local anesthesia agent was induced, an introducer needle of sufficient size, typically 18 or 19 gauge was inserted, and smaller-gauge cutting needles was used in coaxial manner to obtain fine-needle aspirate or core specimens, as required. A blunt trocar needle can help to reduce injury to adjacent structures. For core biopsy at our institution, we typically used a 20-gauge biopsy gun introduced coaxially.

In every biopsy 3D reformation was performed for precise localization of the tip of biopsy gun into the lesion. The following approaches were used to target different sites.

1. Entry to the Base of tongue was made by Submental approach. Semiautomatic gun was utilized to precisely target the site.
2. Tonsillar and Tonsil lingual junction was addressed using the Retromolar trigone approach.
3. Thyrohyoid membrane was the site of safe entry of biopsy gun/needle for Hypopharyngeal masses.

Post biopsy patients were observed for an hour in the radiology department for any post procedure complications.

3. Results

Of the 35 patients, 23 patients underwent CT Guided biopsies, 11 patients had CT Guided FNA and one patient had USG guided biopsy. In 23 patients (CT Guided Biopsy), the biopsy was taken from tongue in 16 patients, Larynx in two patient, Pyriform sinus(PFS), posterior pharyngeal wall, RMT (retromolar trigone), lower GBS and Tonsil sites had one patient each. Of the 11 CT Guided FNAC patients, the site of FNA was from PFS in 7 patients, Tongue in 2 patients RMT and soft palate had one patient each. One patient had undergone USG Guided biopsy for PFS lesion. Out of 35 patients, tissue specimen taken was adequate in 33 patients and inadequate in two patients. The results were supported both histologically and clinically. The histological confirmation was found in 88.6% cases (31/35), squamous cell carcinoma was found in 74.3% cases (26/35), no malignancy in 8.5% cases (3/35), no specific lesion in 5.7% cases(2/35), no definitive diagnosis in 2.8% cases(1/35) and in inadequate in 8.5% cases(3/35). Repeat biopsy in one patient revealed no malignancy. There were no post procedure complications noted.

4. Discussion

Conventionally a growth suspected in the region of larynx, oro-pharynx, base of tongue, pyriform sinus requires a Direct/Indirect Laryngoscopy, Examination under anaesthesia or Panendoscopy. Due to risk of aerosol generation, spread of infection to the hospital staff and patients, image guided procedures(biopsy/FNA) were

utilised for diagnosis of suspected Head and Neck cancers.³ The addition of radiological imaging techniques, including ultrasonography, computed tomography (CT), and magnetic resonance imaging (MRI), to assist in obtaining needle biopsy specimens has been reported.^{4–9} In literature, CT guided biopsy/FNA has better efficiency in diagnosing Head and Neck cancers.

John M. DelGaudio et.al conducted a study to evaluate the diagnostic efficacy of computed tomography (CT)–guided needle biopsies of head and neck lesions.³ In this study, thirty-seven patients underwent 42 CT-guided biopsies. They included 12 lesions in or adjacent to the skull base and 9 lesions around the pharyngoesophageal or laryngotracheal complex; the other lesions were located in the deep lobe of the parotid gland (n = 7), deep neck area (n = 12), and thyroid gland (n = 2). Diagnostic cytologic biopsy specimens were obtained in 38 (91%) of 42 needle biopsy procedures. The results were supported histologically and/or clinically in 36 cases (95%). Eighteen patients underwent open surgical procedures. Histologic confirmation was found in 86% of cases. Nineteen patients (51%) avoided an open surgical procedure: 11 with benign disease and 8 with recurrent malignancy. There were no false-positive or false-negative results, and no complications were identified. They concluded that Computer Tomography guided Biopsy/FNA is safe, reliable and allow improved preoperative planning and patient counselling in surgical patients.

In our series image guided procedure provided a definitive diagnosis in 88.6 percent (n = 31).

Limitations imposed by the COVID-19 pandemic may lead to greater acceptance of this approach.

5. Conclusion

Image-guided sampling is an important adjunct to the diagnosis and management of Head and neck lesions. They have been particularly useful in the current COVID-19 pandemic as they are safe, minimally invasive and are not Aerosol Generating and have been used by us as an alternative to Direct Laryngoscopy Biopsy and Examination under Anaesthesia. Patient tolerance of different positions on the CT table is important to consider before the procedure to ensure that the optimal approach is chosen for sampling. Once the procedure has been initiated, needle selection and technique are critical for increasing diagnostic yield. Knowledge of the various head and neck biopsy approaches and their associated complications helps in maximizing tissue yield and minimizing of morbidity.

6. Source of Funding

None.

7. Conflict of Interest

The author declares no conflict of interest.

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