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RESEARCH ARTICLE

A CASE OF ENCAPSULATED TYPE OF FOLLICULAR VARIANT OF PAPILLARY THYROID CARCINOMA

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Abstract

Papillary thyroid cancer is the most prevalent histologic type of thyroid carcinoma. There are numerous PTC subtypes that have been identified, with classical PTC being the most prevalent. The follicular variant of PTC (FVPTC) is the second most prevalent subtype of papillary thyroid carcinoma. A case of encapsulated type of follicular variant of papillary thyroid carcinoma was studied which showed a well encapsulated tumour with follicular thyroid cells arranged predominantly in a follicular architecture and a few areas showing solid architecture. There was no papillary architecture and capsular invasion. The tumour cells showed nuclear enlargement, overcrowding and nuclear clearing. Typical Orphan Annie eye nuclei were seen. The encapsulated type of follicular variant of papillary thyroid carcinoma, more so than other FVPTCs, has an indolent tendency and is associated with better prognosis and low risk of tumour invasiveness and metastasis.

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Introduction:-

The most frequent endocrine malignant tumour and the cause of the majority of endocrine cancer-related deaths each year is cancer of the thyroid gland.^[1] Papillary thyroid cancer is the most prevalent histologic type (PTC).^[1] There are numerous PTC subtypes that have been identified, with classical PTC (cPTC) being the most prevalent (80%). In 9% to 22.5% of PTC patients, the follicular variant of PTC (FVPTC) is the second most prevalent subtype.^[2-5] Lindsay^[6] published the first histologic description of FVPTC in 1960. Chen and Rosai^[7] and Rosai et al.^[8] followed in 1977 and 1983, respectively. It is defined as a tumour with a follicular growth pattern and nuclear characteristics that are typical of PTC, such as nuclear clearing, grooves, and intranuclearpseudoinclusions.

Numerous diagnostic and management difficulties are brought on by FVPTC. The majority of FVPTCs are encapsulated tumours that are difficult to identify cytologically from benign follicular lesions like follicular adenoma(FTA).

The prognosis is excellent for the encapsulated follicular variant of papillary thyroid cancer, which is distinguished by an encapsulated (occasionally partial) non-invasive tumour with a nearly exclusively follicular pattern, focal to diffuse distribution of papillary carcinoma-specific nuclear features, a low risk of lymph node metastases, a very low risk of recurrence, and a strong association with RAS mutations. An international team of experts on the thyroid

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gland has recently suggested reclassifying this tumour as a non-malignant neoplasm under the name Non-invasive Follicular Thyroid Neoplasm With Papillary-Like Nuclear Features (NIFTP).^[9]

In this report, we describe a case of encapsulated variant of FV-PTC encountered in our hospital set up.

Case History:

A 27 year old woman presented to the Otorhinolaryngology Out Patient Department of our hospital with a complaint of swelling in the midline of neck for 3 months. The swelling was initially the size of a thumb which gradually increased to the size of an apple. She had no history of pain, difficulty in swallowing, hoarseness of voice, difficulty in breathing, fever, flushing, abnormal sweating, palpitations and abnormal weight loss. Her bowels were normal and menstrual history was normal.

On examination, she presented with a swelling of the size approximately 5×4.5 in the midline of neck. It moved with deglutition. On palpation, the swelling had both cystic and solid areas. It was non-tender and was fixed to underlying structures. There were no palpable lymph nodes.

USG of the neck report revealed a hypoechoic mass in the right side of thyroid measuring approximately 1cm in diameter with well-defined margins and foci of microcalcifications. Thyroid profile of the patient showed to be euthyroid.

The patient was advised for FNAC which was performed at our cytopathology department. 3 passes were taken from both the solid and cystic areas and the smears were stained by both MGG and Pap stains. On cytopathological examination, a few follicular cells scattered in a background of thick and thin colloid was seen. It was diagnosed under Category II: Benign as per Bethesda System of reporting thyroid cytopathology.

The patient subsequently underwent right hemithyroidectomy and the right thyroid specimen along with Level IIA and IIB neck lymph nodes of right side were sent for histopathological examination. On gross examination, the specimen measured 5cm×3cm×2cm. The outer surface was brownish in colour and encapsulated. The cut surface showed a solid mass with haemorrhagic areas measuring 1cm×0.5cm×0.1cm. The biopsy sample was grossed and subjected to routine histopathological processing, and stained with haematoxylin and eosin stain.

Under the microscope, the sections showed a well encapsulated tumour with follicular thyroid cells arranged in a predominantly in a follicular architecture and a few areas showing solid architecture. There was no papillary architecture and capsular invasion. No lymphovascular invasion seen. A few psammoma bodies were seen. The tumour cells showed nuclear enlargement, overcrowding and nuclear clearing. Typical Orphan Annie eye nuclei were seen. A few of the cells also showed nuclear grooving. The margins were free of tumour cells. Sections from the lymph nodes showed no metastasis.

The case was diagnosed to be Encapsulated type of Follicular variant of Papillary Thyroid Carcinoma.

Images:



Fig 1:- Gross view of the right hemithyroidectomy specimen. Cut section shows a solid encapsulated growth with cystic area.

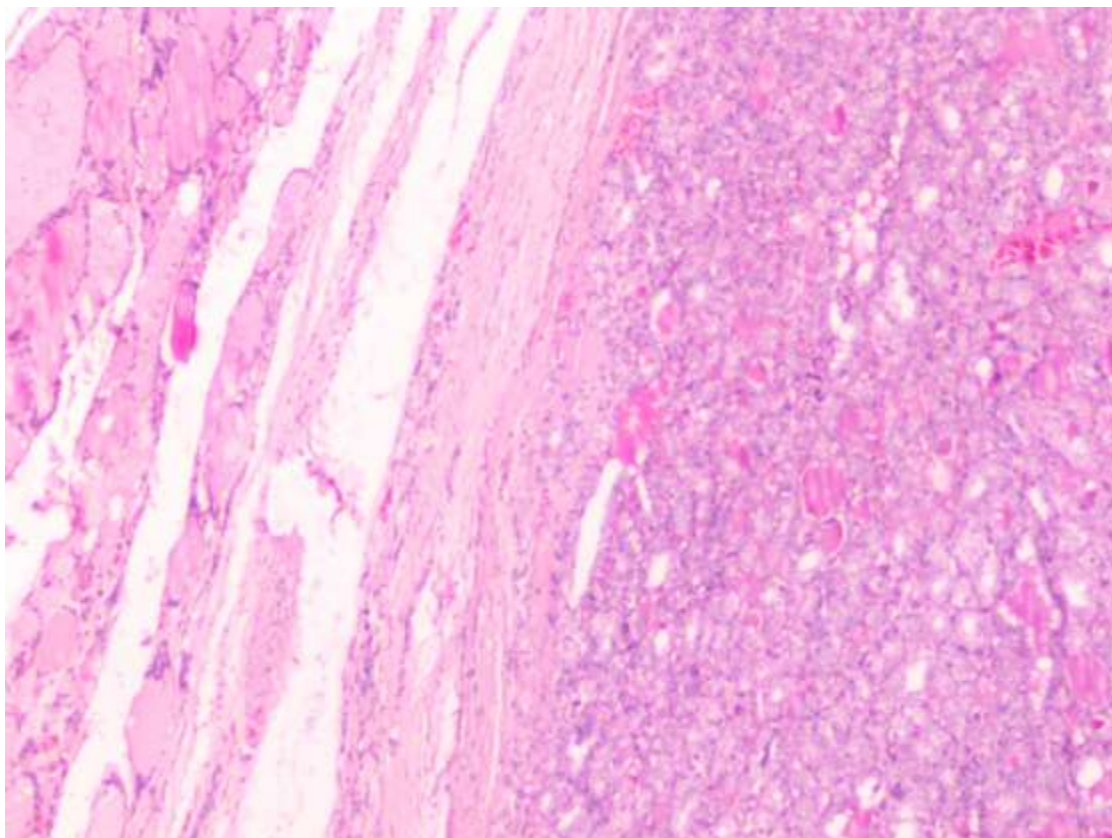


Fig 1:- Photomicrograph showing capsule of the FV-PTC tumour (H&E, 4X).

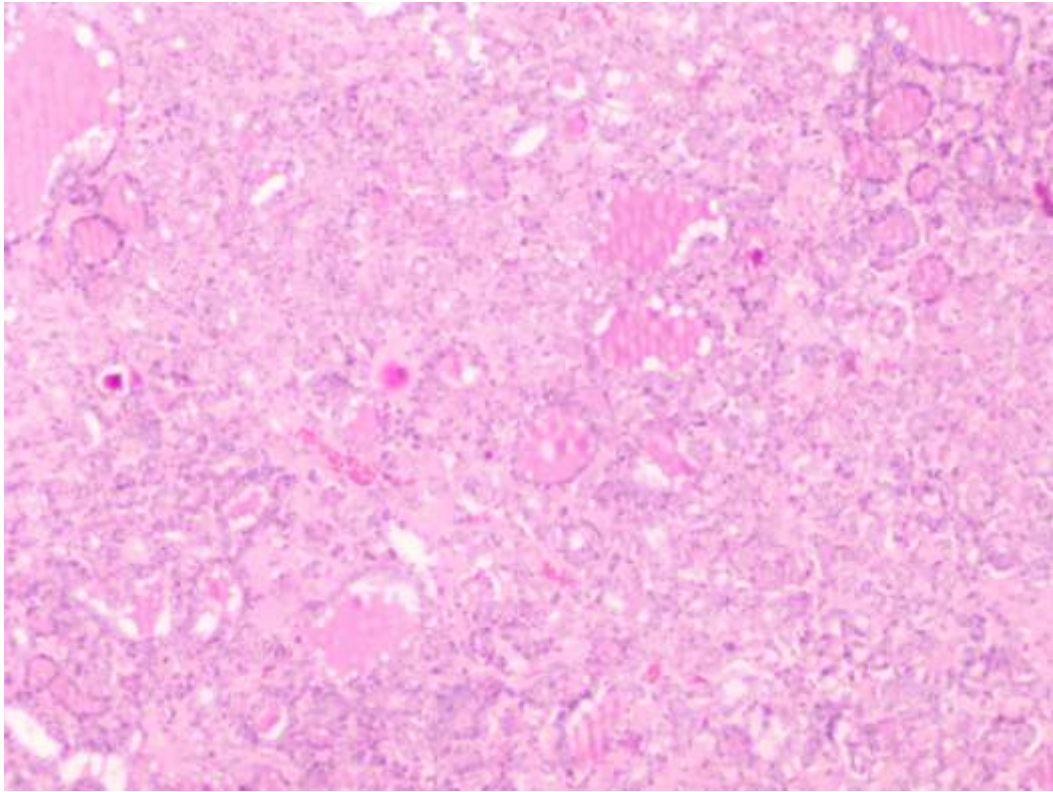


Fig 2:-Photomicrograph showing follicular architecture of the FV-PTC tumour (H&E, 4X).

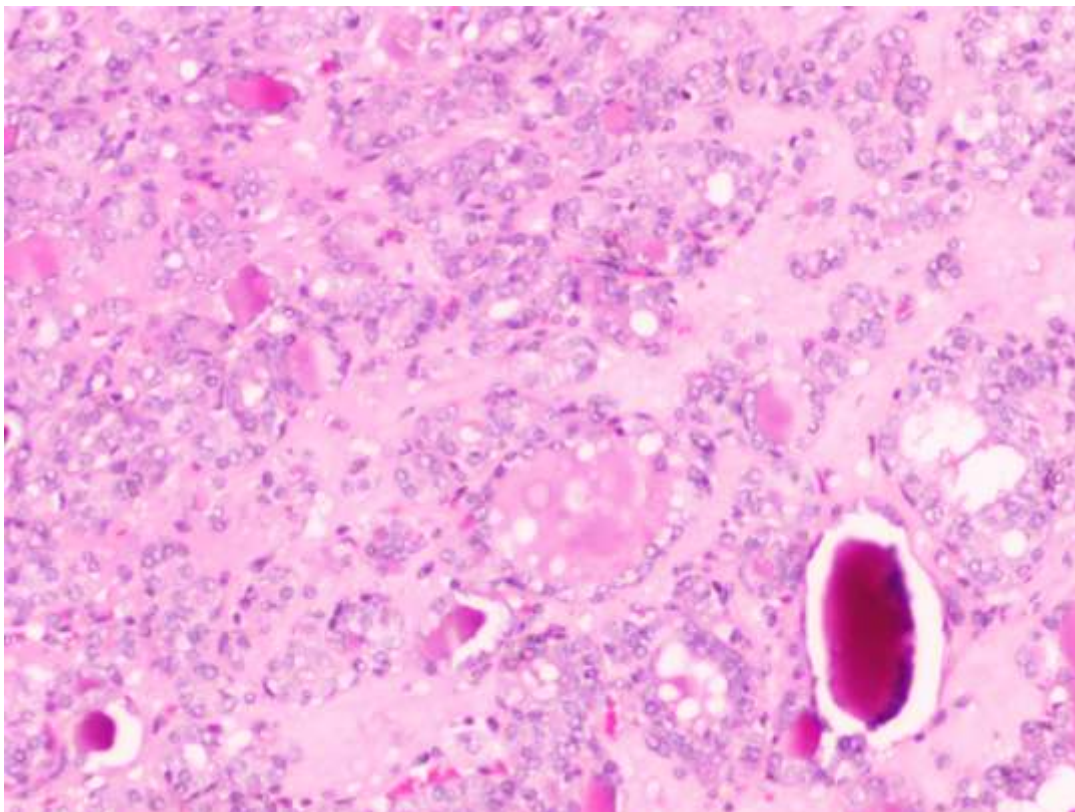


Fig 3:- Low power view of the tumour showing follicular architecture with PTC like nuclear features and a psammoma body.

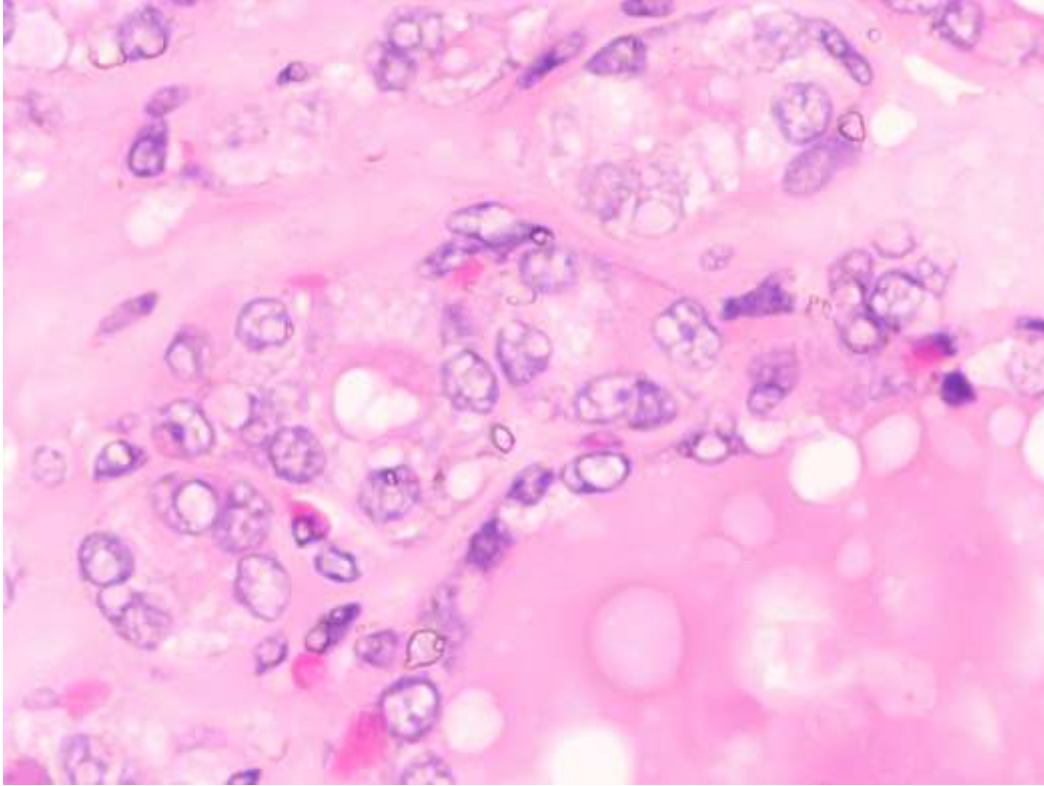


Fig 4:- Tumour cells showing PTC nuclear features: Orphan Annie eye and nuclear grooving. (H&E, 40X).

Discussion:-

The biologic nature of the tumour affects how papillary thyroid carcinoma is treated. The malignant potential of the initial tumour affects the role of the complete thyroidectomy, central neck dissection, and postoperative radioiodine (RAI) ablation to aid in the prevention of recurring disease. According to earlier research, EFVPTC exhibits less cPTC-like behaviour and more FTA/FTC-like behaviour, with a reduced prevalence of BRAF V600E mutations and nodal metastases. There lies the importance of distinguishing this entity while diagnosing thyroid tumours.

As per the study by Gupta et al.^[10] in 2010 in 103 samples of follicular variant of papillary thyroid carcinoma, the encapsulated type of follicular variant of papillary thyroid carcinoma was mostly prevalent in females, with a median tumour size of ≤ 4 cm, did not show any extra thyroidal extension, nodal metastasis or vascular invasion. As per the study by Thompson et al.^[9] in 94 cases of FV-PTC, the lesion was most common in females less than 45 years of age, and most prevalent in the right lobe of thyroid. These features were concordant with our case.

Follicular adenoma, follicular carcinoma, and follicular variant of papillary thyroid cancer are among the differential diagnoses of thyroid lesions with encapsulated follicular patterns. These lesions all share a similar clinical morphology and physical appearance. The presence of capsular and/or vascular invasion is a requirement for the diagnosis of follicular carcinoma, and the identification of the proper nuclear characteristics of papillary thyroid cancer (PTC) is a requirement for the diagnosis of FVPTC.

When completely contained within the tumour capsule or when coupled with capsular and/or vascular invasion, the encapsulated variant of FVPTC might be mistaken for follicular adenoma or follicular carcinoma.

In a study done by Ibrahim et al.^[11] Benign category was the second most commonly used diagnostic category for cases of Non-invasive encapsulated follicular variant of papillary thyroid carcinoma. The predominance of colloid sampled from the cystic area of the lesion and lack of demonstration of PTC nuclear features in the few follicular cells sampled under MGG stain may explain the reporting of the smears as such.

The diagnosis of encapsulated FVPTC in thyroid gland pathology is difficult and contentious. Cancer diagnosis in tumours devoid of invasion depends solely on identifying the distinctive nuclei, whose evaluation is frequently arbitrary and even disputed, resulting in persistently substantial interobserver variability. Additionally, research from the past ten years has shown that EFVPTC, more so than other FVPTCs, has an indolent tendency and is genetically distinct from infiltrative tumours. The National Cancer Institute organised a symposium in 2012 to assess the issue of over diagnosis and overtreatment of indolent tumours in various organs. After the conference, some attendees made a statement emphasising the need to change nomenclature, substituting the word "cancer" as evidence develops to justify a more lax diagnosis. Non-invasive Follicular Thyroid Neoplasm With Papillary-Like Nuclear Features (NIFTP) is the more preferred term for encapsulated variant of FV-PTC.^[12]

Further investigation in this case may be done using the IHC markers HBME-1 and EMA to confirm the papillary thyroid carcinoma nature of this tumour.

Conclusion:-

The encapsulated type of follicular variant of papillary thyroid carcinoma is an entity with histopathological features of papillary thyroid carcinoma, having predominantly follicular architecture and completely encapsulated. When compared to other types of FV-PTC or other variants of PTC, it is highly indolent and shows less metastatic and local invasive potential. Therefore it is important to distinguish this entity while diagnosing thyroid tumours.

Conflict Of Interest:

None.

Financial Help:

None.

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