



## Case Report

# Virchow's Node: Immunocytochemistry an Asset in Diagnosis of Carcinoma of Unknown Primary

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### ABSTRACT

Gastric cancer accounts for 8% of the total cancer and for the 10% of the deaths for all cancers [1]. It is more common in males and has been associated with risk factors such as low socio-economic status, cigarette smoking, nitrites, chronic gastritis and H.pylori. In advanced stages, the patients of gastric cancer rarely metastasize to supraclavicular lymph nodes which is responsible for dismal outcome. FNA is imperative for a hasty diagnosis and if combined with immunocytochemistry can offer diagnosis with reasonable sensitivity and specificity.

To the best of our knowledge, a very few studies on FNA of the virchow's node has been published that adequately highlights the diagnostic utility of integrating immunocytochemistry along with cytomorphicologic findings.

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## Introduction

The left supra-clavicular lymph node, classically described as Virchow's node is frequently involved by metastatic malignancies of abdominal and pelvic organ.<sup>[1]</sup> In advanced stages, gastric cancer frequently metastasize to the draining regional lymph nodes, liver, peritoneum, omentum, lungs and mesentery and rarely seen metastasizing to non-regional lymph nodes (Virchow's nodes).<sup>[2]</sup> Although rare, but patients may present with supraclavicular lymphadenopathy as the initial clinical manifestation.<sup>[1]</sup> Assessment of lymph node metastasis is crucial as it is an independent prognostic factor for gastric cancer and signifies a poor prognosis. The overall survival of gastric cancer patients with positive lymph nodes was significantly lower than that of lymph node-negative patients, and higher recurrence rate is noted in lymph node positive patients as compared to negative ones.<sup>[3]</sup>

The present case emphasizes on the importance of needle aspiration cytology in supraclavicular lymphadenopathy in the setting of occult carcinoma and reinforces the need of immunocytochemistry in shortening the long list of differential diagnosis to reach a definitive diagnosis.

## Case Report(S)

A 72 years old female presented with complaints of pain abdomen and vomiting for 20 days which was gradually progressive in nature. On examination, a left supraclavicular lymph node was incidentally noticed. The swelling measured 1×1 cm and was firm to hard in consistency. Patient was subjected to FNA of the supraclavicular lymph node using a 22-gauge needle. The cytology smears were cellular and showed dyscohesive clusters of cells having abundant vacuolated cytoplasm pushing hyperchromatic nucleus to one side resembling a signet ring cell appearance. No glandular structures were seen (figure 1).

Immunocytochemistry panel of CK7/CK20, LCA and MUC5AC was applied to the supraclavicular lymph node aspirate to rule out the mimickers and locate the site of primary malignancy. ICC results showed strong cytoplasmic positivity of CK7, CK20, MUC5AC while negative for LCA (figure 3,4,5)

Patient was subjected to further relevant investigations. Upper GI endoscopy showed a large multinodular proliferative growth seen extending from the GE junction and circumferentially involving the body of the stomach. Antrum appeared relatively spared. There was a nodule involving the pyloric opening. CECT abdomen showed diffuse irregular nodular wall thickening of body, pylorus and omentum of stomach extending upto first

part of duodenum. Small bowel obstruction with sudden narrowing in the mid-ileal region due to stricture was noticed. Subsequently, the biopsy of the tumour growth was taken.

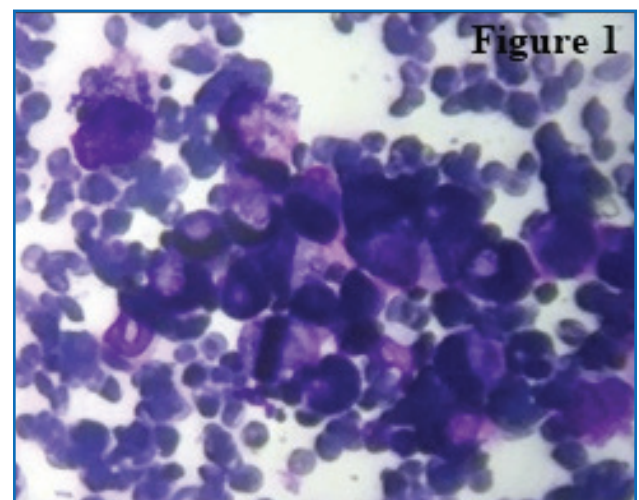
H&E stained section showed a diffuse growth of malignant cells associated with inflammation. The cells are large, round with abundant intracytoplasmic mucin displacing nucleus to one side giving it a signet ring cell appearance (figure 2).

So, a combined approach involving FNA and Immunocytochemistry helped us in reaching out a definitive diagnosis of signet ring cell carcinoma of gastric origin. This was further confirmed by histopathology of the gastric biopsy.

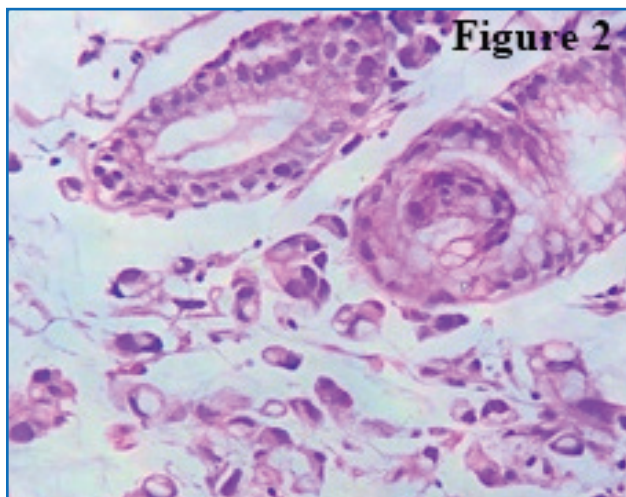
## Discussion

Gastric carcinoma is the second most common cancer worldwide with highest rates in Asia. The majority of gastric cancer is located in the pylorus and antrum (50-60%), followed by cardia (25%), and the body or fundus (15-25%).<sup>[4]</sup> According to Lauren's classification of GA, the intestinal type has well formed glands lined by columnar to cuboidal epithelial cells and the diffuse type which shows single to poorly formed nest of cells growing in an infiltrative pattern (signet ring cell carcinoma).<sup>[5]</sup>

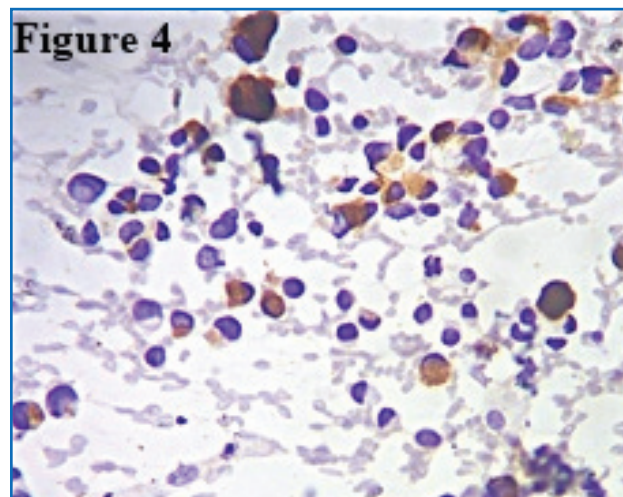
Virchow's node lies near to the junction of the thoracic duct and the left subclavian vein, it receives lymphatic drainage from most part of the body before draining into systemic circulation. Any blockade in the form of tumor emboli via the thoracic duct usually leads to the enlargement of left supraclavicular lymph node.<sup>[6]</sup> Presence of Virchow's nodes alerts the clinician as well as pathologist to investigate for the primary.



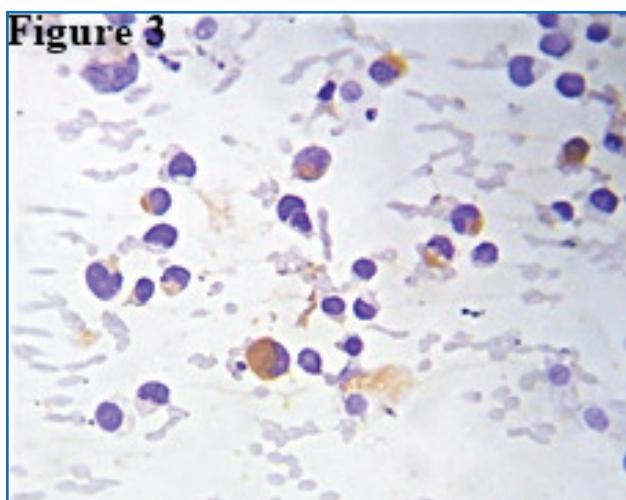
**Fig. 1: Cytology smear showing cells having abundant vacuolated cytoplasm (signet ring cell)**



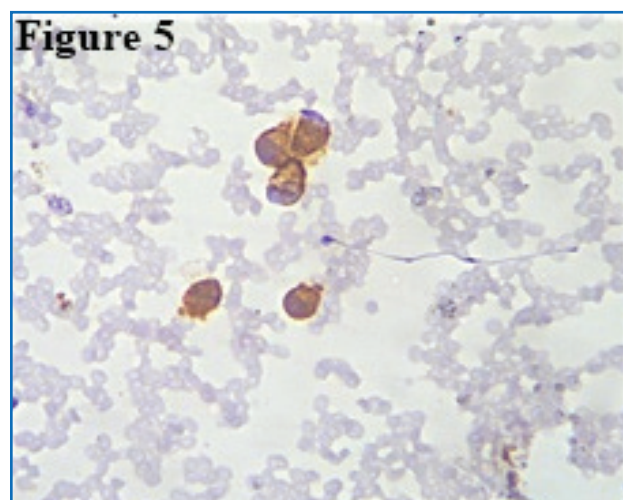
**Fig. 2:** H&E section of gastric biopsy shows signet ring cells



**Fig. 3:** CK 7 shows strong cytoplasmic positivity



**Fig. 4:** CK 20 shows strong cytoplasmic positivity



**Fig. 5:** MUC5AC shows strong cytoplasmic positivity

The Virchow's node is typically enlarged in gastric cancer, but it can also be seen in lymphomas, and malignancies of breast, esophageal, pelvic and testicular region.<sup>[7]</sup> The task of identifying the primary malignancy gets arduous when patient solely presents with supraclavicular lymphadenopathy in absence of other clinical symptoms. The easy accessibility of enlarged SCLNs offers an ideal target for FNA by palpation alone.<sup>[8]</sup> Needle aspiration cytology can confer the presumptive diagnosis but has a dubious role in the setting of occult carcinoma. This mandates the use of ancillary technique like immunocytochemistry to rule out the differentials.

The immunocytochemistry panel of CK7, CK20 and MUC5AC can help in ruling out the differentials and it was found that gastric carcinoma was strongly positive for CK7, CK20 and MUC5AC. The lymphoma on cytological

smears show immature population of lymphoid cells and immunocytochemistry shows negativity for CK7, CK20 & MUC5AC (Table 1).

Although, breast malignancies are rarely encountered in males but still it was kept in the list of differentials and was successfully ruled out as breast carcinoma shows cytoplasmic positivity for CK7 while negative for CK20 and MUC5AC. Esophageal carcinoma shares the similar immunocytochemical profile as that of breast carcinoma (Table 1).

Testicular carcinoma also on rare instances can present with Virchow's node and cytologically shows features of poorly differentiated adenocarcinoma.<sup>[9]</sup> Immunocytochemistry is of immense help as these tumors consistently shows negativity for CK7/CK20 as well as MUC5AC (Table 1).

**Table 1: Immunocytochemistry panel in metastasis of unknown primary.**

Carcinoma of unknown primary	LCA	CK7	CK20	MUC5AC
Gastric carcinoma	-	+	+	+
Lymphoma	+	-	-	-
Breast carcinoma	-	+	-	-
Esophageal carcinoma	-	+	-	-
Testicular carcinoma	-	-	-	-

Although, gastric carcinoma is more commonly encountered in lower socioeconomic groups with high mortality rate, but long term survival is possible if patients present at an early stage. As proper management and timely surgical interventions prolongs patient survival and if combined with aggressive surgery, five year survival rates may reach upto 90%.<sup>[10]</sup>

### Conclusion

Although, presence of Virchow's nodes alerts the pathologist to think of metastatic malignancies of gastric and abdominal malignancies but with long list of differentials exact diagnosis becomes dubious. Early identification of nodal involvement is of supreme importance as it points towards advanced disease. Picking up nodal metastases may influence therapeutic decisions and FNAC can be used as first line investigation in diagnosing such metastases with certainty.

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### Competing Interests

Not Declared

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