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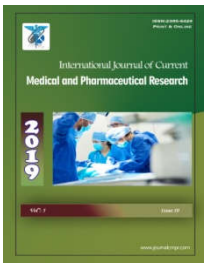

Case Report

PLEURAL EFFUSION CYTOLOGY OF METASTATIC PAPILLARY RCC MIMICKING PAPILLARY CARCINOMA OF THYROID: AN INTERESTING CASE REPORT

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ABSTRACT

Malignant Pleural effusion in renal cell carcinoma is rare and pleural fluid cytology is necessary for its diagnosis. Though tumour cells are shed more in effusion fluid, good cytomorphology and clinical correlation are essential for accurate diagnosis. Here the author misinterpreted the malignant pleural effusion secondary to papillary renal cell carcinoma with that of papillary carcinoma of thyroid due to the presence of artifactual intra nuclear inclusion. Detailed clinical history and additional cell block section morphology helped to arrive at accurate diagnosis. It emphasizes the importance of clinical details and supplementary cell block study for improving the diagnostic accuracy of malignant effusion.

INTRODUCTION

Malignant effusion is defined as accumulation of exudative fluid along with malignant tumour cells [1].The responsibility of pathologists in diagnosing malignant effusion includes two aspects- 1.Identification of malignant cells accurately 2.Identification of tumour type [2]. Many times, the pathologists face a diagnostic challenge in identifying malignant cells in effusion fluid because of morphological distortion induced by artefact and morphological mimicking of reactive mesothelial cells with malignant cells. In addition, lack of adequate clinical details also creates diagnostic difficulty. The purpose of this paper is to highlight the value of clinical information and supplementary cell block study for diagnostic accuracy.

Case Report

A 49 years old lady presented to chest medicine department with a complaints of breathing difficulty, orthopnoea, fever and cough with blood tinged sputum for 10 days. Patient was a known diabetic and Hypertensive and controlled with regular drugs. Clinical examination showed stable vital signs with diminished air entry on left side of chest. X-ray chest revealed Left sided massive pleural effusion. Pleural fluid was drained and sent for cytological diagnosis with a clinical suspicion of tuberculosis or malignancy.10ml of hemorrhagic fluid was received in cytology laboratory. Cytospin smear was made and stained with Haematoxylin & Eosin after fixation with 70% alcohol. Smear showed micro papillary fragments of epithelial tumour cells with indistinct cytoplasmic membrane, eosinophilic cytoplasm, granular chromatin in the crowded nucleus and prominent nucleoli.[Figure -1]. Some tumour cells show well defined intra nuclear inclusion also [Figure-2]. The diagnosis of malignant pleural effusion was made with a suspicious primary of thyroid papillary carcinoma. Then cell block technique was tried by the following procedure for additional confirmation of diagnosis.

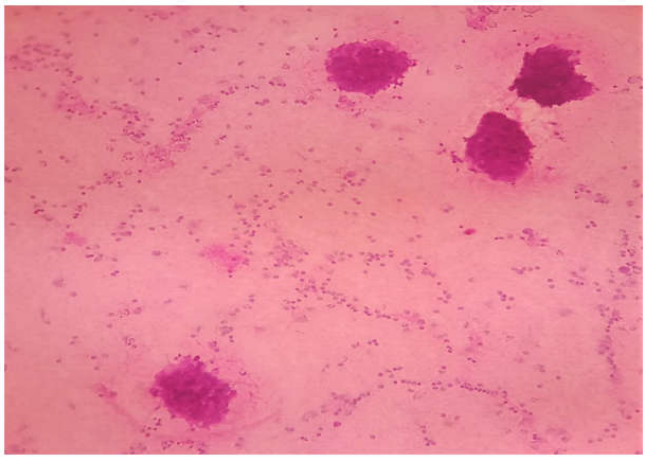

Figure 1 Photomicrograph showing papillary fragments of tumour cells with scattered inflammatory cells in the background. (Sediment smear). Haematoxylin & Eosin x 100

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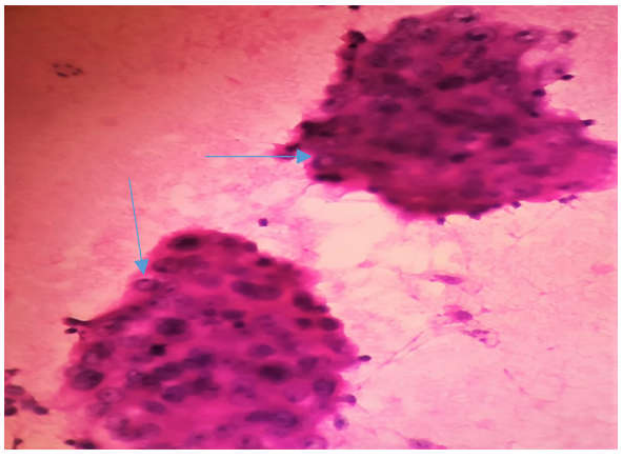

Figure 2 Photomicrograph showing papillary fragments of tumour cells with eosinophilic cytoplasm, prominent nucleoli and intra nuclear inclusions.-Arrow mark. (Sediment smear). Haematoxylin & Eosin x 400

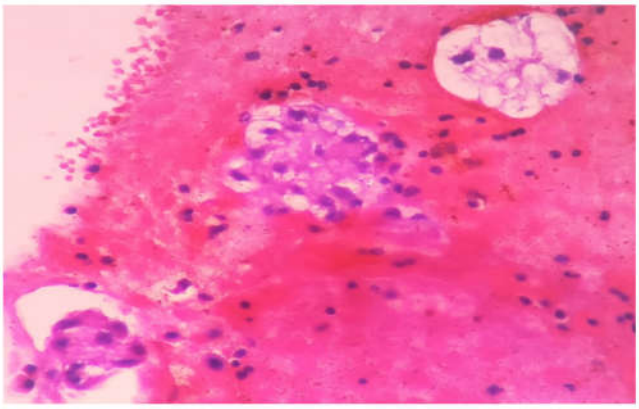

Figure 3 Photomicrograph showing clusters of clear tumour cells along with tumour cells with granular eosinophilic cytoplasm in hemorrhagic background. (Fluid Cell block section). Haematoxylin & Eosin x 400

Cell block technique

1. Centrifugation of effusion fluid was done with 3000rpm for 3-5 minutes.
2. Supernatant fluid was discarded and centrifugation of sediment was done again with same speed for 3-5 minutes.
3. Sediment was placed over the slide along with a drop of fresh blood
4. The blood was clotted within few minutes that entrapped the granular particles of sediment.
5. The blood clot was gently scrapped off as cell button and put it in the container containing 10% formalin for fixation
6. Cell button was processed after 1 hour for histopathological study

Section made from cell block showed few clusters of epithelial tumour cells having abundant clear bubbly cytoplasm as well as eosinophilic cytoplasm mimicking renal cell carcinoma [Figure-3]. The cyto diagnosis of malignant pleural effusion with the possible primary source of papillary renal cell carcinoma was made after getting clinical details from the clinician. The report was released with a suggestion to confirm with immunocytochemistry study using cell block section.

DISCUSSION

Identification of malignant cells and the type of tumour in effusion fluid played an important role in diagnosis and prognosis of the patient. Moreover effusion fluid can be collected easily rather than needle biopsy and more cellularity can be obtained since cells are shed from widespread area of serous cavity .So effusion fluid cytology is a useful diagnostic modality for malignancy. The common cause of exudative pleural effusion is Tuberculosis followed by malignancy [3]. Among the malignancy, metastatic cancer of lung, breast, ovary and lymphoma are the common causes rather than primary mesothelioma [4]. But Cases have been reported with metastatic pleural effusion from renal cell carcinoma (RCC) and thyroid malignancy [5, 6, 7]. Male predominance was observed in RCC metastatic effusion in their report whereas the affected patient was female in our study. Malignant pleural effusion usually indicates the advanced state of the disease with poor prognosis and it occurs after the tumour cell infiltration of lung and pleura. But cases had been reported with isolated pleural involvement in RCC leading to malignant effusion [8]. Since the patient wanted to continue the treatment in the previous health care centre where nephrectomy was done, CT, MRI chest were not done in our case to assess the lung and pleura involvement.

Renal cell carcinoma accounts for 1-2% of malignant pleural effusion and occur frequently in papillary and clear cell subtype of renal cell carcinoma [9].Sub typing of papillary renal cell carcinoma needs papillary architecture of tumour cells in the fluid and we appreciated this papillary pattern nicely in our case. So with the provisional diagnosis of papillary carcinomatous deposits in the mind, we concentrated on the cyto morphology of tumour cells. Since tumour cells showed intra nuclear inclusion which is a hallmark feature of papillary carcinoma of thyroid we had a doubt of primary thyroid origin. But it can occur in ovarian tumours also and studies showed higher incidence of intra nuclear inclusion in clear cell ovarian carcinoma tumour cells in effusion fluid [10].Since our patient was a female, this might have been originated even from ovary also. In order to get an accurate diagnosis, we did a cell block preparation as many studies showed the utility and value of cell block study for fluid cytology in improving diagnostic accuracy [11].Literature stated a technique of using plasma and thrombin to form a clot for entrapping cellular sediments, but we tried a new simpler technique of cell block preparation using fresh blood. Cell block section showed clusters of clear cells and cells with granular eosinophilic cytoplasm but the nuclear features were not favouring the thyroid and ovarian primary. There was no nuclear grooving, inclusion and no significant nuclear features of malignancy and it arouse the suspicion of renal cell carcinoma origin. So we communicated the clinician regarding the detailed clinical findings and they revealed the past history of nephrectomy with the biopsy diagnosis of papillary renal cell carcinoma. This explained the importance of communication of cytopathologist with the clinician regarding clinical information especially for fluid cytology where we received only the samples and not the patient. Moreover most of the cytomorphology of tumour cells are overlapped and so accurate diagnosis needs additional studies, interpretation with associated factors and clinical information. One more advantage of additional cell block study in fluid cytology is multiple sections can be cut for immunocytochemical study for confirming the primary site of tumour.

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References

1. Ioannis Psallidas, Ioannis Kalomenidis, Jose M.Porcel , Bruce W. Robinson, Georgios T.Stathopoulos. Malignant Pleural Effusion from bench to bedside. European Respiratory Review.2016; 25:189-198.
2. Gupta S, Sodhani P, Jain S. Cytomorphological profile of neoplastic effusions: An audit of 10 years with emphasis on uncommonly encountered malignancies. *Journal of cancer research and Therapeutics*. 2012; 8:602-9
3. Kushwaha R, Shashikala P, Hiremath S, Basavaraj H G. Cells in pleural fluid and their value in differential diagnosis. *Journal of Cytology*. 2008; 25:138-43
4. Neeraj R.Desai and Hans J.Lee. Diagnosis and management of malignant pleural effusions: state of the art in 2017. *Journal of Thoracic disease*. 2017; 9(10):S1111-S1122.
5. S.H.Jiang, Y.W. Zhang, L.N.Jiang, X.L.Zhang, F.L.Shan, Z.Z.Cheng. Three cases of pleural metastasis of renal cell carcinoma diagnosis: cases report. *International Journal of Radiation research*. 2019; 17(1):183-188.
6. Kosmas K, Tsonou A, Mitropoulou G, Salemi E, Kazi D, Theofanopoulou A. Malignnt pleural effusion from papillary thyroid carcinoma diagnosed by pleural effusion cytology: A case report. Diagnostic cytopatholoy. 2018; 46(2):204-207.
7. T.Phupitakphol, R.Alejandro, S.L.C.Kwa. Malignant pleural effusion as the first presentation of thyroid cancer. *American journal of Respiratory and critical care medicine*.2018; 197:A6686.
8. Kataoka .M , Yata .Y , Nose .S , Yasuda .K and Ohara. T. Solitary pleural metastasis from renal cell carcinoma: a case of successful resection. Surgical case report.2015;1(1):36
9. Abhinav Agarwal, Sonu Sahni, Asma Iftikhar ,Arunabh Talwar. Pulmonary manifestations of Renal cell carcinoma. Respiratory medicine.2015; 109(12):1505-1508.
10. Masaki Naka C.T, Yoshihro Ohishi, Tsunehisa Kaku, Sumiko Watanabe C.T, Sadafumi Tamiya. Identification of intra nuclear inclusions is useful for the cytological diagnosis of ovarian clear cell carcinoma. Diagnostic cytopathology.2015; 43(11)879-884.
11. Udasimath Shivakumarswamy, Surekha U Arakeri, Mahesh H Karigowdar and BR Yelikar. Diagnostic utility of the cell block method versus the conventional smear study in pleural fluid cytology. *Journal of cytology*. 2012; 29(1):11-15.

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