

## Case Report (II)

### Parkinsonism Associated with Carcinoma Ovary

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#### ABSTRACT

The association of Parkinsonism with cancer is rare. Paraneoplastic Parkinsonism is almost unheard of. We report a case of epithelial ovarian cancer temporally associated with Parkinsonism. A 61-year-old previously healthy lady presented with ascites and progressive abdominal distension for three months. This was followed one month later by subacute onset of classical Parkinsonian features, which progressed to severe bradykinesia. At presentation she was bedridden and had impaired swallowing and hypophonia. She had palpable abdominal masses and ascites. Serum CA -125 was 14053.0 U/ml. Ascitic fluid cytology revealed papillary adenocarcinoma cells. MRI of the brain revealed multiple focal white matter and basal ganglial hyperintensities. Close temporal association with ovarian cancer, rapid progression to near complete immobility and absence of known etiologies point towards a probable paraneoplastic origin of the syndrome in this patient.

#### INTRODUCTION

Paraneoplastic neurologic syndromes of clinical significance are encountered in 1% of all cancers<sup>1-2</sup>. Some cases of ovarian cancer are also associated with paraneoplastic neurologic syndromes<sup>3</sup>. Subacute cerebellar degeneration, neuromyopathy, and necrotizing myelopathy are the usual syndromes<sup>1</sup>. Basal ganglial involvement with extrapyramidal syndrome is an extremely rare occurrence in cancers. We report the association of Parkinsonism with a

case of epithelial ovarian cancer, as an exhaustive literature search revealed only one similar report<sup>4</sup>.

#### CASE REPORT

A 61-year-old lady presented with ascites and progressive abdominal distension of 3 months duration. She had no past medical illnesses. Two months prior to presentation she developed tremors of hands, bradykinesia, dysphagia and hypophonia. These symptoms progressed rapidly and soon she became bedridden. Subsequently, she received one month of empirical anti-tubercular treatment with Isoniazid, Rifampicin, Pyrazinamide, Streptomycin and Ethambutol, along with Frusemide and Spironolactone. There was no history of dementia.

Examination revealed a normotensive elderly lady with pitting edema of the feet and mild dehydration. She had marked ascites with palpable abdominal masses. Neurological examination showed intact higher mental functions and cranial nerves. Jaw jerk was not brisk. She had evidence of severe Parkinsonian features including mask-like face, tremors at rest in extremities, cogwheel rigidity, and extreme bradykinesia. Motor power and sensations in the limbs were intact.

Initial investigations revealed serum sodium 113 meq/L, potassium 2.3 meq/L, serum albumin 2.7 mg/dl, CA- 125 of 14053.0 u/ml. The CBC, other liver function tests, and renal function tests were normal. CT scan of the abdomen revealed multiple peritoneal deposits, omental caking, and matted bowel loops. Ascitic fluid

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cytology showed cells from papillary adenocarcinoma. The MRI of the brain showed multiple focal hyperintensities in cerebral white matter and basal ganglia, reminiscent of the changes in hypoxic ischemic encephalopathy. After initial rehydration and correction of electrolytes, single agent Carboplatin was administered as the first cycle of chemotherapy, along with Levodopa and Carbidopa. Second cycle onwards Paclitaxel was included with Carboplatin. The patient gradually improved with respect to both ascites and Parkinsonism. She became ambulatory and was able to perform activities of daily living. The CA-125 fell to 2954 U/ml from a baseline of 14053 U/ml after 3 cycles of chemotherapy. After the fourth course of chemotherapy she was taken up for standard staging laparotomy for ovarian cancer. Total abdominal hysterectomy with bilateral salpingo-oophorectomy and infra-colic omentectomy was done. There was gross residual tumor at multiple intra-peritoneal locations at the end of surgery. The histopathologic examination of the surgical specimen revealed residual viable serous papillary cystadenocarcinoma of the ovaries. She is planned for a few more courses of chemotherapy with paclitaxel and carboplatin at the time of writing this report. The parkinsonian features continue to show steady improvement and patient is on regular anti-Parkinsonian medication as described above.

#### DISCUSSION

Neurologic symptoms in a case of cancer are very often due to metastases, chemoradiotherapy toxicity, metabolic derangement, or infections. Infrequently, a paraneoplastic syndrome is the cause. Clinically significant paraneoplastic neurologic syndromes are seen in less than 1% of all cancers. The paraneoplastic origin of the syndrome may be categorized as "suspected" if all other causes are excluded and therapy of the tumor results in documented improvement in the neurologic symptoms<sup>2</sup>. It is "established" if a marker of the syndrome (e.g. anti-neuronal antibodies) is documented or alternatively,

postmortem study is negative for other etiologies<sup>2</sup>. The present case had no obvious etiology for the Parkinsonism and also showed partial improvement with antineoplastic and antiparkinsonian therapy.

Literature search revealed a single report<sup>4</sup> of an association between Parkinsonism and cancer. In this report the diagnosis of Parkinsonism preceded that of breast cancer by 3 months. The patient finally died of the complications of immobility despite chemotherapy. Plasmapheresis, Levodopa-Carbidopa, and anticholinergics were tried. Autopsy revealed pigment-laden macrophages in substantia nigra with loss of pigmented neurons. Our case is being reported as suspected paraneoplastic Parkinsonism in view of the strong temporal correlation between the two disorders. The syndrome caused major management problems and required specific drug therapy. Gradual improvement in the syndrome with therapy makes it different from the previous report. Given the MRI findings, the probable pathogenesis could be focal perivascular inflammation and demyelination<sup>3</sup>. However chance association of idiopathic Parkinsonism with ovarian cancer cannot be entirely ruled out. Interestingly, a recent paper<sup>5</sup> reported the association of *Parkin*, a gene involved in the pathogenesis of juvenile and early onset Parkinson's disease and possibly also in the development and/or progression of ovarian cancer. The significance of this gene in paraneoplastic Parkinsonism is currently unknown.

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