**Case Report**
Volume 12:12, 2022

Clinical Case Reports

ISSN: 2165-7920 Open Access

# Anti-Yo Associated Paraneoplastic Neurologic Syndrome in a Patient with Pelvic Tumor – A Case Report

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**Abstract**

**Objective:** Report a case with probable autoimmune sensorimotor neuropathy positive for serum anti-Yo antibodies.

**Background:** Paraneoplastic neurological syndrome occurs because of immune-mediated neuronal dysfunction secondary to systemic malignancy, and the symptoms usually occur before the malignancy is discovered. Anti-Yo antibody is known to be an onconeural antibody that causes paraneoplastic cerebellar degeneration associated with ataxia and cerebellar dysfunction and denote an underlying malignancy, usually gynecological tumors. Here, we have reported a rare case of autoimmune sensorimotor neuropathy positive for serum anti-Yo antibodies presenting with tremors, slurred speech and unstable gait, in a patient with pelvic tumor.

**Case Report:** A 56-year-old female patient presented with an 8 months history of upper limbs tremors, slurred speech and an unstable gait for past 6 months. Initially, the patient underwent a brain MRI, which showed mild cerebellar atrophy, paranasal sinusitis and possible right frontal endogenic small osteoma. While investigating further, the anti-Yo antibodies in serum and cerebrospinal fluid were found to be weakly positive. On ultrasound, an abnormal echogenic structure was found in the left side of the pelvic cavity, with the absence of the uterus. As such, a pelvic MRI was carried out, which showed abnormal signals in bilateral accessory areas.

**Conclusion:** This is a rare case of autoimmune sensorimotor neuropathy positive for serum anti-Yo antibodies in a patient with a pelvic tumor. The appearance of neurological symptoms should raise suspicions for paraneoplastic autoimmune disorders.

**Keywords:** Anti-Yo antibody • Anti-Purkinje cell cytoplasmic antibody 1 • Cerebellar degeneration protein-2 antibody • Paraneoplastic syndrome • Sensorimotor neuropathy • Pelvic tumor

## Introduction

Paraneoplastic cerebellar degeneration is an inflammatory autoimmune process that occurs due to the destruction of cerebellar Purkinje cells by onconeural antibodies that are produced by the immune system in response to a protein that is expressed by tumor cells [1,2]. These can affect the nervous system and finding a cause may be challenging. Paraneoplastic syndrome can be rapidly progressive and very debilitating. They can also precede the diagnosis of the underlying malignancy [2-4]. We report a case of a rare scenario where a patient exhibited the features of paraneoplastic syndrome with a pelvic tumor. The diagnosis was made based on MRI, ultrasound and blood analysis findings and our patient was diagnosed with paraneoplastic cerebellar degeneration associated with anti-Yo antibodies, also called anti-Purkinje cell cytoplasmic antibody 1 or cerebellar degeneration protein-2 antibody. Because of the rapid progression of paraneoplastic syndrome, a prompt recognition and treatment of this disease are crucial to the prevention of significant disability [1].

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**Received:** 29 November, 2022; Manuscript No. jccr-22-81723; **Editor Assigned:** 01 December, 2022; PreQC No. P-81723; **Reviewed:** 13 December, 2022; QC No. Q-81723; **Revised:** 19 December, 2022, Manuscript No. R-81723; **Published:** 26 December, 2022, DOI: 10.37421/2165-7920.2022.12.1541

## Case Presentation

A 56-year-old, married, retired female patient attended the Nanjing Neurological Hospital on 25th April 2022, with complaints of left upper limb tremors for 8 months, slurred speech and unstable gait for 6 months. On examination she had a blood pressure of 141/91 mmHg, pulse of 72 beats/min, body temperature 36.3°C, respiration rate 18/minute, height 1 m68 cm, weight 70.5 kg, body surface area 1.83 $m^2$. Family history: Nil significant.

**Marriage and Obstetrics history:** Married, delivery of a live female baby naturally in 1990, following which the patient used Intra Uterine Contraceptive Device.

**Gynecologic history:** Menarche at age 15 years old, regular menstrual period lasting 7 days each month, with normal menstrual flow, and not associated with dysmenorrhea. The patient underwent menopause at age 46 years old.

**Past Medical History:** Type 2 Diabetes Mellitus.

**Past Surgical History:** Subtotal Abdominal Hysterectomy for fibroid uterus in 2012.

**Drug allergy:** Nil known till date.

**Physical examination:** Normal posture, clear mind, conscious, alert and well oriented, unclear slurred speech, weakness noted on her left arm with an unstable gait. No superficial lymphadenopathy ad no obvious edema were noted.

**Respiratory System:** Clear and equal air entry bilaterally.

**Cardiovascular System:** Regular and uniform heart rhythm. No murmurs heard.

**Abdomen:** Soft, non-tender, no guarding, no rigidity, no palpable mass.

Liver and spleen not palpable, normal percussion in the liver and kidney areas, negative mobile dullness, and normal bowel sounds. No deformity of spine and limbs, normal active movements and normal physiological reflexes.

**Gynecological examination:** the vulva and vagina were grossly normal looking; the cervix is smooth and bilateral adnexa were unremarkable.

## Investigations

1. Brain MRI: Mild cerebellar atrophy, paranasal sinusitis and possible right frontal endogenic small osteoma.
2. Anti Yo Antibodies: Anti Yo antibodies in serum and cerebrospinal fluid were found to be weakly positive.
3. Ultrasound: An abnormal echogenic structure was found in the left side of the pelvic cavity and absence of the uterus was noted.
4. Pelvic MRI: Abnormal signals in bilateral accessory areas in keeping with tumors originating from sex cord stroma.

Based on the above-mentioned findings, the patient was referred to our hospital (Jiangsu Cancer Hospital & Jiangsu Institute of Cancer Research and the Affiliated Cancer Hospital of Nanjing Medical University) for further investigations and management.

## Admission diagnosis

1. Pelvic tumor with paraneoplastic neurologic syndrome.
2. Type 2 Diabetes Mellitus.

## Preoperative examination

**Tumor markers:**

1. Carcinoembryonic antigen 0.483 ng/mL,
2. Sugar chain antigen 1259.97 U/ml,
3. Human epididymal secretory protein 466.9 pmol/L,
4. Sugar chain antigen 19-9 5.15 U/mL,
5. Sugar chain antigen 15-3 7.86 U/ml,
6. Alpha fetoprotein 5.5 ng/ml,
7. Neuron specific enolase 10 ng/mL,
8. Squamous cell carcinoma associated antigen 0.47 ng/ml;

No obvious abnormality was found in blood routine test, biochemical test, blood coagulation test, infection immunity test, etc. Electrocardiography showed: 1. Sinus rhythm 2. Part of T wave changes 3. III showed qr type.

## Computer tomography scan

1. Pelvic and Abdomen showed a space-occupying lesion. A round, low-density shadow was noted in the right kidney, with clear boundary; No obvious abnormality was found in the liver, gallbladder, left kidney, spleen, pancreas and adrenal glands. The small lymph nodes near the abdominal aorta were less than 1.0 cm. The uterus was absent. A soft tissue dense nodule measuring about 2.6 * 2.85 cms in size was seen near the iliac vessels of the pelvic wall outside the left peritoneum. The boundary of which was smooth, and its internal consistency was slightly uneven. The local boundary between the lesion and the left adnexa was unclear, and a full lymph node was noted beside the lesion. The accessory areas were slightly dense bilaterally. No obvious enlarged lymph nodes were found on the other two sides of the pelvic wall and groin. A vestibular gland cyst was noted.
2. Thorax showed slightly thickened bilateral pleura; scattered shadows were seen in both lungs, indicating chronic inflammation; no obvious pleural effusion was noted bilaterally, no obvious enlarged lymph nodes appreciated.
3. The upper edge of T12 vertebral body is slightly depressed with the formation of Schumer's tubercle.

## Surgery

The patient underwent exploratory laparoscopy under general anesthesia on May 18, 2022 due to pelvic tumor. Macroscopically, there was no obvious fluid accumulation in the pelvic cavity, the liver and diaphragm surfaces were smooth, and no obvious mass was found in the gastrointestinal tract and greater omentum. However, the greater omentum and intestine were tightly adherent to the bladder and rectal peritoneum. Blunt and sharp adhesiolysis were carried out. The uterus was absent, and no obvious abnormality was found in the appearance of bilateral accessories. A 5.0 cm long protrusion was found in the retroperitoneal cavity of the left pelvic wall. On the right side of the pelvic wall, a 'cauliflower like' tissue was noted with a diameter of 3.0 cm. Based on what was seen during the surgery, the decision to perform laparoscopic bilateral salpingoophorectomy with retroperitoneal lesion resection and pelvic wall lesion resection was carried out. Specimen collected was immediately sent to the hystopathological laboratory for rapid pathological examination. Based on the hystopathological findings, it was noted that both the right and left appendages confirmed the nature of the specimen collected. As for the left retroperitoneal tumor, atypical cells were seen. Throughout the surgery, anesthetic effect was adequate, surgical procedures were smooth and unremarkable, intraoperative blood lost was estimated to about 30 ml, no blood transfusion was required during the operation. Urine collected in catheter bag and tube amounted to 200 ml, clear colored. Vital parameters stayed stable throughout the surgery. Because of the patient's initial neurological complaints, the anesthesiology team decided to transfer her to Intensive Care Unit for better postoperative monitoring and further evaluation. The next day post-operative, the patient was successfully transferred back from Intensive Care Unit to general ward of gynecological oncology department.

## Postoperative histopathology report

1. Left retroperitoneal: malignant tumor in lymph node. Immunohistochemical labeling was recommended
2. Left and right appendages: no special condition was found.
3. Supplementary report on May 30, 2022 (Figure 1).
   A. **Right ovary:** after being deeply incised, a few poorly differentiated tumors (range 1 * 0.7 mm) were seen in the cortical area, which combined with immunohistochemical markers of lymph node metastasis, conformed to high-grade serous cancer
   B. **IHC20223558:** AE1/AE3+; CK5/6-; P40-; P63-; PAX-8 local+; WT-1+; CK7+; ER+70%; PR individual cells+; vim-; P16 part+;

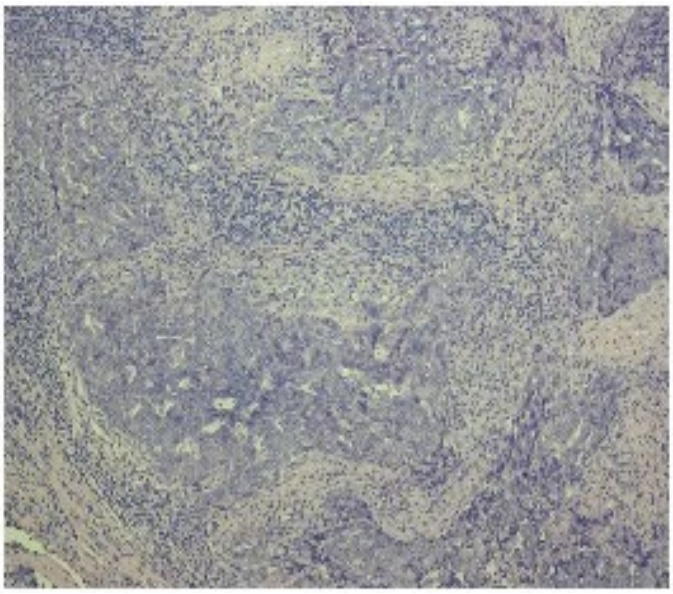

**Figure 1.** Immunohistochemical labelling.

GATA-3-; CD99+; S100 local+; ki-67+50-60%; inhibin-; calretnin-; MelanA-.

## Results

### Post-operative follow up

**Follow up as on 13th November 2022:** After the surgery, the patient was transferred to her home city where she received six courses of chemotherapy. Combination therapy with albumin-bound paclitaxel 450 mg and carboplatin 500 mg regimen was given to the patient on 9th June, 5th July, 2nd August, 6th September, 27th September and 20th October of the same year. It was noted that during chemotherapy, there was bone marrow suppression and subsequently symptomatic treatment was given. Results of a control test for tumor markers came out within normal limits. At present, there is no obvious discomfort, and the neurological symptoms are more stable than before.

## Discussion

We present a rare case of paraneoplastic neurologic syndrome (PNS) associated with pelvic tumor. Neurological symptoms appeared 6-8 months before the diagnosis of pelvic tumor with PNS was established. The diagnosis of PNS is a complex process that always requires exclusion of primary etiology of neurologic symptoms, including among others-vascular disorders, infection, nervous tissue tumors or hereditary syndromes. PNS are neurologic deficits triggered by an underlying remote tumor [5]. These are caused by processes other than physical or metabolic involvement from tumor and not explained by any other reason for neurological disorder. Specific types of paraneoplastic syndromes are associated with specific cancers and autoimmunity plays its role; hence specific pathogenic antibodies are associated with specific cancers as they are developed from cross reactivity to tumor antigens [6]. Ovarian tumors account for about 10% of malignancies associated with PNS [7]. The latter often precede clinical manifestation of a tumor and enable diagnosis at an early stage. Interestingly, neoplasms that appear in patients with PNS are limited in size and metastasize less commonly than those without PNS [8]. The onset of signs and symptoms of paraneoplastic syndrome is usually sub-acute and develops within a few weeks. PNS manifests clinically as cerebellar syndrome. The patient suffers from incoordination of movements (ataxia), balance and gait disturbances, speech disorder (dysarthria) and altered ocular movements (nystagmus, often in a downbeat form) [9]. Laboratory analyzes may reveal the presence of onconeuronal antibodies. The most common type of antibody found in PNS is anti-cdr2 (cerebellar degeneration protein-2 antibody), also known as anti-Yo [10]. Magnetic resonance imaging (MRI) in PNS can reveal cerebellar atrophy. In some PNS patients, however, both MRI and CT scan can appear normal [11-12].

## Conclusion

The diagnosis of SOJIA is mainly clinical and based on the ILAR criteria. The diagnosis of MAS is based on the PRINTO criteria and involves a combination of clinical and laboratory criteria. Clinical presentation of MAS involves sudden clinical deterioration with persistent high-grade fever and a rise in inflammatory markers with a fall in ESR, fibrinogen, and platelet. High degree of clinical suspicion is warranted as MAS is inadvertently fatal with a high risk of mortality if undiagnosed. Prompt diagnosis and aggressive management are essential for good outcomes.

## Conflict of Interest

The authors declare they have no conflicts of interest regarding this article.

## Funding Information

The authors declare that they have not received any funding from any institutions or other entities regarding this article.

## References

1. Aly, Ragia and Prabhu D. Emmady. "Paraneoplastic Cerebellar Degeneration." (2020).
2. Zekeridou, Anastasia, Masoud Majed, Ioannis Heliopoulos and Vanda A. Lennon. "Paraneoplastic autoimmunity and small-cell lung cancer: Neurological and serological accompaniments." *Thorac Cancer* 10 (2019): 1001-1004.
3. Graus F Graus, Francesc and Josep Dalmau. "Paraneoplastic neurological syndromes: Diagnosis and treatment." *Curr Opin Neurol* 20 (2007): 732-737.
4. Titulaer, M. "Department of neurology, facult of medicine/Leiden Uni ersit Medical Center (LUMC), Leiden Uni ersit." (2010): 188716174.
5. Zaborowski, Mikolaj Piotr, Marek Spaczynski, Ewa Nowak-Markwitz and Slawomir Michalak. "Paraneoplastic neurological syndromes associated with ovarian tumors." *J Cancer Res Clin Oncol* 141 (2015): 99-108.
6. PE, Jiménez Caballero. "Paraneoplastic chorea caused by anti-CRMP5 antibodies associated with small cell lung cancer." *Neurologia* 29 (2013): 446-447.
7. Giometto, Bruno, Wolfgang Grisold, Roberta Vitaliani and Francesc Graus, et al. "Paraneoplastic neurologic syndrome in the PNS Euronetwork database: A European study from 20 centers." *Arch Neurol* 67 (2010): 330-335.
8. Hetzel, David J, C robert Stanhope, Brian P. O'Neill and Vanda A. Lennon. "Gynecologic cancer in patients with subacute cerebellar degeneration predicted by anti-Purkinje cell antibodies and limited in metastatic volume." *Mayo Clin Proc* 65 (1990):1558-1563.
9. Peterson, K, MK Rosenblum, H Kotanides and JB Posner. "Paraneoplastic cerebellar degeneration: IA clinical analysis of 55 anti-Yo antibody-positive patients." *Pract Neurol* 42 (1992): 1931-1931.
10. Anderson, Neil E, Marchc K Rosenblum and Jerome B. Posner. "Paraneoplastic cerebellar degeneration: Clinical-immunological correlations." *Annals of Pract Neurol* 24 (1988): 559-567.
11. Negishi, Y, K Sakai, Y Noguchi and N Iwasaki, et al. "Paraneoplastic cerebellar degeneration caused by ovarian clear-cell carcinoma." *J Obstet Gynaecol Res* 2 (2014): 614-617.
12. Binks, Sophie, Christopher Uy, Jerome Honnorat and Sarosh R. Irani. "Paraneoplastic neurological syndromes: A practical approach to diagnosis and management." *Pract Neurol* 22 (2022): 19-31.

**How to cite this article:** Beharee, Nitish, Lihua Zhang and Jinhua Wang. "Anti-Yo Associated Paraneoplastic Neurologic Syndrome in a Patient with Pelvic Tumor - A Case Report." *Clin Case Rep* 12 (2022): 1541.