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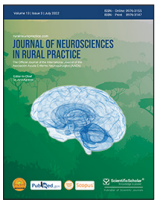

Case Report

Morvan's syndrome: An unusual presentation of a solid pseudopapillary pancreatic tumor

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ABSTRACT

Morvan's syndrome is a rare anti-contactin-associated protein-like 2 (CASPR2) antibody-mediated autoimmune disorder. The clinical features of this syndrome include muscular twitching, insomnia, dysautonomia, peripheral nerve hyperexcitability, and fluctuating delirium. An underlying tumor is commonly found among Morvan's syndrome cases, with thymoma being the most frequent association. We describe an unusual case of a 39-year-old female with excruciating bilateral leg pain, insomnia, hyperhidrosis, peripheral nerve hyperexcitability, serum anti-CASPR2 antibody positivity, and a solid pseudopapillary tumor of the pancreas on histopathology. Furthermore, the patient's symptoms improved after receiving intravenous immunoglobulin (0.4 g/kg per day for 5 days). To the best of our knowledge, this is the first case of Morvan syndrome associated with a solid pseudopapillary pancreatic tumor to be reported in the literature to date. Our case adds to the spectrum of malignancies that are associated with Morvan's syndrome. The recognition of this rare syndrome and its various associations are important for the neurologist, as it is a potentially treatable condition.

Keywords: Morvan's syndrome, Anti-voltage-gated potassium channel, Contactin-associated protein-like 2, Pseudopapillary pancreatic tumor, Myokymia

INTRODUCTION

The term "la chorée fibrillare" was first used by the French physician Augustine Marie Morvan to describe a syndrome encompassing muscular twitching, insomnia, dysautonomia, and fluctuating delirium.[1] An underlying tumor is commonly found among Morvan's syndrome cases, with thymoma being the most frequent association.[2] However, Morvan's syndrome co-occurring with a solid pseudopapillary tumor of the pancreas has not been previously reported. We present an interesting case that adds to the ever-increasing spectrum of malignancies found to be associated with Morvan's syndrome.

CASE HISTORY

A 39-year-old lady had dull aching epigastric pain for the past 7 months. Contrast-enhanced computed tomography (CT) of the abdomen revealed a tumor in the pancreatic head. Four months after abdominal pain onset, she developed insomnia and continuous twitching in bilateral calves, the angle of the mouth, chin, and nostrils. In addition, she had severe bilateral leg pain and episodes of hyperhidrosis. Three months after neurological symptom onset, she underwent tumor resection. Histopathology showed cells lying in sheets with papillary patterns, trabeculae, and immunohistochemical positivity for vimentin, p53, beta-catenin, and E-cadherin, suggesting a solid pseudopapillary tumor of the pancreas [Figures 1 and 2]. However, her symptoms persisted despite the tumor resection. Physical examination revealed facial, lingual, and gastrocnemius myokymia [Video 1 Segments 1-3]. The rest of the neurological examination was normal. Complete hemogram, liver, and renal function tests were normal. Cerebrospinal fluid analysis (CSF) showed five cells (all lymphocytes), and no malignant cells were noted. CSF sugar and proteins were 62 mg/dl (RBS – 102 mg/dl) and 36.7 mg/dl, respectively. The rest of the CSF analysis (grams, acid-fast, and India ink staining) was normal. High-resolution CT chest, contrast-enhanced MRI brain with screening of whole spine, electroencephalogram, and nerve conduction studies were normal. Electromyography revealed continuous spontaneous activity in the form of doublets, triplets, multiplets, and fasciculation potentials in bilateral gastrocnemii and genioglossus suggesting peripheral nerve hyperexcitability [Video 2]. Serum anti-voltage-gated potassium channel (VGKC) and contactin-associated protein-like 2 (CASPR2) antibodies were strongly positive by cell-based assay. She was initially treated with intravenous methylprednisolone (1 g daily for 5 days) along with antiepileptics (for peripheral

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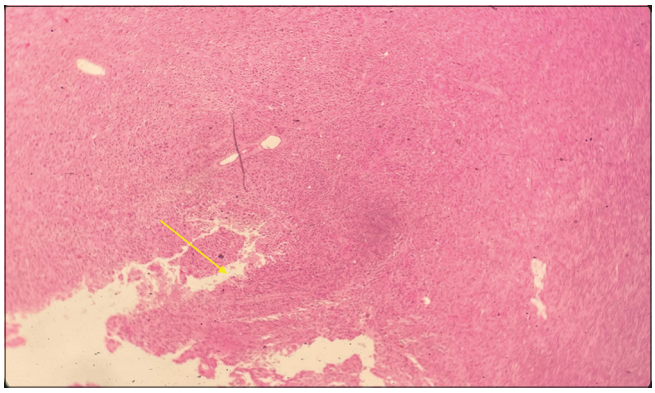


Figure 1: Hematoxylin and eosin (H&E) stained section of the resected pancreatic mass (low power) showing tumor cells lying in sheets with papillary pattern (yellow arrow) and trabeculae.

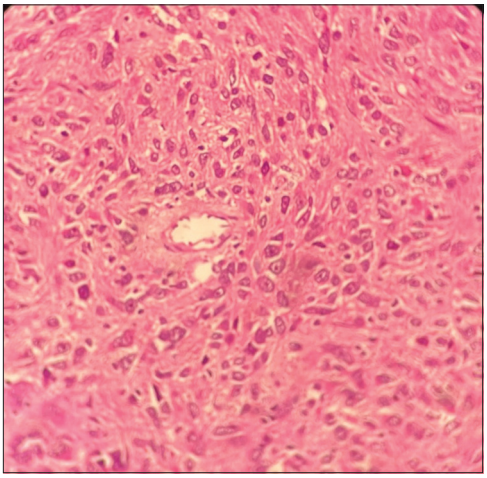
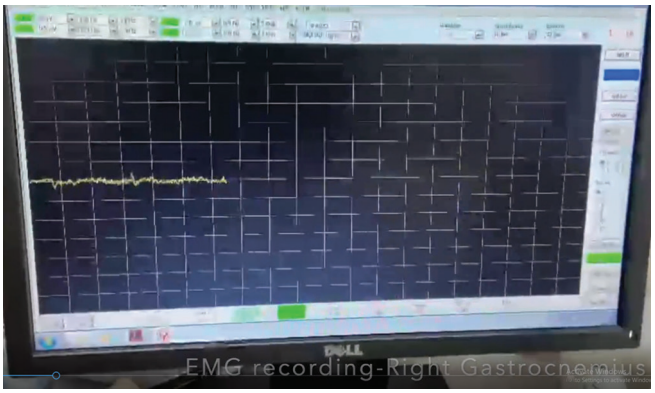


Figure 2: High-power magnification from the resected specimen showing large and round to oval individual cells with indistinct cell membrane with a blood vessel in the center.



Video 1 Segment 1: Facial myokymia involving bilateral alae nasi, orbicularis oris, mentalis, and depressor anguli oris muscles in a patient with Morvan's syndrome. **Segment 2:** Lingual myokymia in a patient with Morvan's syndrome. **Segment 3:** Bilateral gastrocnemii showing continuous rippling (myokymia).

Video 2: Electromyographic recording from the right gastrocnemius showing continuous doublets, triplets, multiplets, and fasciculation potentials.

nerve hyperexcitability). However, symptoms persisted, following which she received intravenous immunoglobulin (0.4 g/kg per day for 5 days). One week post-infusion, bilateral lower limb pain decreased by 50% while muscle twitching, hyperhidrosis, and insomnia improved completely. Four weeks post-discharge, her symptoms had resolved completely, and the patient is currently on monthly follow-up.

DISCUSSION

Antibodies against anti-VGKC complex, particularly against the CASPR2, are pathognomonic of Morvan's syndrome.[3] In a recent series of 256 LGI1/CASPR2 seropositive patients, 20% CASPR2 IgG single positive patients had an associated tumor with thymoma being present in 37.5% of these cases, melanoma in 25%, while basal cell carcinoma, prostatic, and tonsillar malignancies were detected in one case each.[4] Endometrial adenocarcinoma, pulmonary adenocarcinomas, and sigmoid colon carcinomas have also been associated with anti-CASPR2 antibody-positive Morvan's syndrome.[5-7] However, there are no case reports on Morvan's syndrome being associated with pancreatic malignancies.

Solid pseudopapillary tumor of the pancreas is a rare neoplasm (1% of pancreatic tumors) with low malignant potential. It usually occurs in the third decade and is 10 times more common among females. The tumor commonly presents with abdominal pain and is usually positive for alpha-1 antitrypsin, CD10, CD56, and vimentin.[8] The co-occurrence of Morvan's syndrome with this rare pancreatic tumor could be due to the presence of unknown tumor antigens bearing molecular similarity to CASPR2. Formation of autoreactive T-cells which may activate B-cells and stimulate IgG antibody production against CASPR2 might be plausible mechanisms. Persistence of our patient's

neurological symptoms could be due to the formation of memory T- and B-cells and circulating plasma cells.

CONCLUSION

To the best of our knowledge, this is the first case of Morvan syndrome associated with a solid pseudopapillary pancreatic tumor to be reported in the literature to date. Our case adds an extremely rare pancreatic neoplasm to the list of tumors co-occurring with Morvan's syndrome. High suspicion and awareness of this syndrome, and its associations are required, as it is potentially treatable by immunosuppression and removal of the underlying tumor.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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