



### **Case Report:**

### **Ganglioneuroma Always A Histopathological Diagnosis**

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**Citation:** Shetty PK, Balaiah K, Gnana Prakash S, Shetty PK. Ganglioneuroma Always A Histopathological Diagnosis. *Online J Health Allied Scs.* 2010;9(4):19

**URL:** <http://www.ojhas.org/issue36/2010-4-19.htm>

**Open Access Archives:** <http://cogprints.org/view/subjects/OJHAS.html> and <http://openmed.nic.in/view/subjects/ojhas.html>

Submitted: Nov 4, 2010; Accepted: Dec 28, 2010; Published: Jan 20, 2011

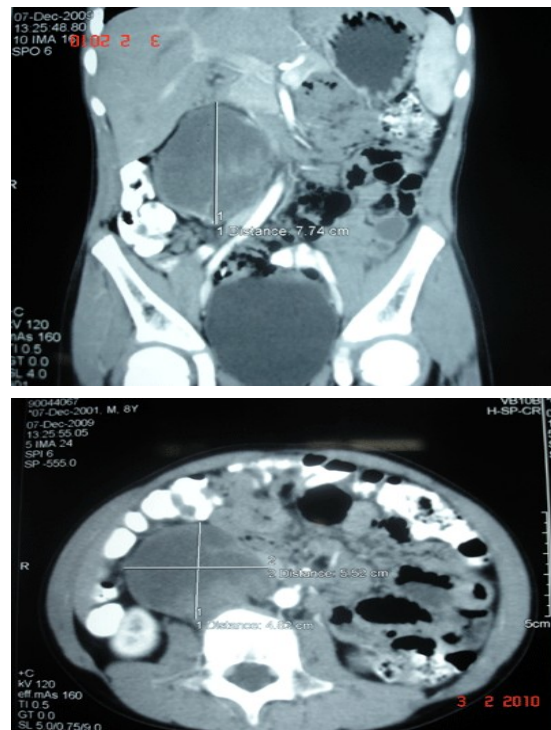
#### **Abstract:**

Neuroblastoma, ganglioneuroblastoma and ganglioneuroma arise from sympathetic tissue in the neck, posterior mediastinum, adrenal gland, retroperitoneum and pelvis. Ganglioneuromas are commonly seen in childhood. They are highly differentiated benign tumors and are compatible with long-term disease free survival. Retroperitoneal localization is relatively frequent for these tumors. Due to its rarity and lack of specific radiological findings diagnosis is always postoperative. Here, we present a case of Retroperitoneal ganglioneuroma which was undiagnosed before surgery.

**Key Words:** Ganglioneuroma; Retroperitoneum; Computed Tomography

#### **Case Report:**

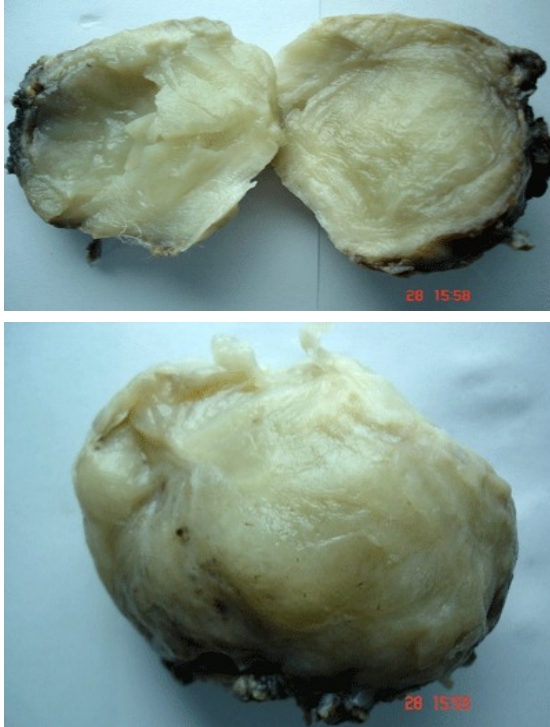
A 8-year-old boy presented with a 6-month history of pain abdomen and distension. He had a good appetite and unaltered bowel and bladder habits. On physical examination his vital signs were normal. On per abdominal examination, about 8x8 cm non tender, non fluctuating mass was palpated at lower mid abdomen. No hepatosplenomegaly / Ascitis was noted. Bowel sounds were existing and normal. Bilateral hernial orifices were normal. Bilateral testicles were normal in the scrotum. All laboratory studies were within normal ranges and included Complete Hemogram, Liver Function Tests and Renal Function Tests. His chest X ray was normal. Contrast enhancing computed tomography (CT) scan of the abdomen showed 7.7x5.5x4.8cms mixed attenuation well defined mass with no significant contrast enhancement in the retroperitoneum pushing the right kidney laterally and inferior vena cava anteriorly.



**Figure 1,2: Contrast enhancing CT scan showing retroperitoneal mass.**

Radiological features were suggestive of a Neuroblastoma / Retroperitoneal Sacroma. Based on radiological findings a laprotomy followed by total resection of the tumor was performed. There was no evidence of Ascites/ Peritoneal seedling.

Grossly the tumor was a large encapsulated mass measuring 7x5cms outer surface was gray white gleasing and cut surface was solid, homogenous, dull gray white cut surface.



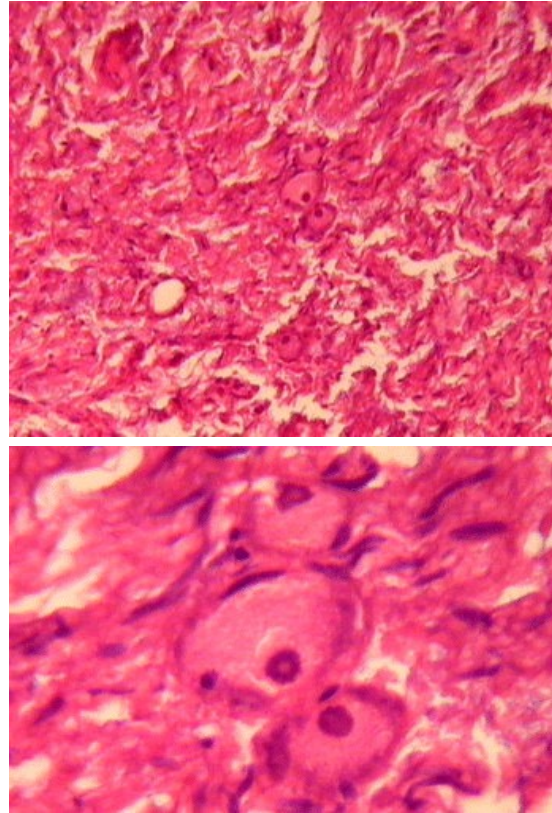
**Figure 3,4: Gross photograph of ganglioneuroma outer and cut surface.**

Histologically, tumor was composed of Schwann cells, fibrous tissue and embedded within were large cells with abundant cytoplasm, large nuclei and prominent nucleoli (ganglion cells). There was no evidence of atypia / mitosis / necrosis.

Based on the histopathological features a diagnosis of retroperitoneal ganglioneuroma was made. Post-operative period was uneventful, patient was discharged on 8<sup>th</sup> postoperative day.

#### Discussion:

Neuroblastomas, ganglioneuroblastomas and ganglioneuromas are tumors of the sympathetic nervous system that arise from the neuroectodermal cells derived from the neural crest cells. These tumors differ in their degree of cellular and extracellular maturation; Neuroblastoma tend to be aggressive and occur in younger patients (Average 2 years), whereas Ganglioneuroma occur in older children (Average 7 years).<sup>1</sup> Ganglioneuromas may occur spontaneously or during the therapy for neuroblastomas with either chemotherapy or radiation therapy.<sup>2,3</sup> The reported incidence of ganglioneuroma is one per million population. They are mostly sporadic but there are a few reports of ganglioneuromas associated with neurofibromatosis type II and multiple endocrinologic neoplasia type II.<sup>4</sup> Ganglioneuromas can be found in the central nervous system or peripherally in the sympathetic system. The most common localization is the posterior mediastinum followed by the retroperitoneal space.<sup>5</sup> Retroperitoneal ganglioneuromas are usually non-functioning and asymptomatic until they reach large sizes in which case they cause symptoms due to local expansion and pressure on adjacent structures.<sup>2</sup> Although symptoms of autonomic dysfunc-



**Figure 5, 6: Hematoxylin and eosin of 10x and 40x respectively shows fibrocollagenous tissue and Schwann cells with ganglion cells.**

-tions are usually seen in patients with hormone secreting ganglioneuromas, such symptoms may also be seen in patients with paravertebral ganglioneuromas compressing the autonomic fibers of the lumbosacral plexus.<sup>6</sup> Also, there are functional ganglioneuromas that were found to release peptides such as vasoactive intestinal peptides (VIP), somatostatins and Neuropeptide Y (NPY) in the literature. These tumors may cause some symptoms like diarrhea, sweating and hypertension related to those peptides. Diarrhea in this patient can be caused by this kind of intestinal peptides. Since ganglioneuromas may release catecholaminergic peptides, surgeons should be aware of the possibility of hypertensive crisis during the surgery.<sup>7</sup> Radiological examination also has no diagnostic value in most cases. Because of the rarity of retroperitoneal ganglioneuromas and absence of any characteristic radiologic features, imaging of these tumors is not reliable and diagnostic.<sup>8</sup> Preoperative diagnosis of retroperitoneal ganglioneuroma is often difficult and the diagnosis is usually based on histopathological findings after surgical excision of the tumor.<sup>8</sup> Although in some cases aspiration cytology with fine needle has been reported to be useful in the preoperative diagnosis of adrenal ganglioneuroma, since the tumoral tissue can contain fractions of less well differentiated areas, surgical exploration is required to achieve a definitive diagnosis and risk assessment.<sup>9</sup> Grossly, they are large, encapsulated masses of firm consistency with an homogenous, solid, grayish white cut surface. Areas with different color or consistency should be sampled for microscopic examination with the suspicion of less differentiated foci. They can be multiple and or associated with other independent types of neurogenous neoplasms such as neuroblastoma and pheochromocytoma.<sup>8</sup> Microscopically, it consists of a spindle cell tumor resembling a neurofibroma but shows numerous ganglion cells. Microscopically ganglioneuromas have consists of a

spindle cell tumor composed of neuritic processes, Schwann cells and perineural cells and show numerous ganglion cells.<sup>8,10</sup>

Ganglioneuromas are typically slowly growing, benign tumors and have a tendency to remain clinically silent for a considerable time. Most patients have prolonged survival without any evidence of progression. According to many authors, surgical excision is sufficient for the treatment.<sup>9</sup> Preoperative or post-operative chemotherapy or radiotherapy have no value in the treatment except it was associated with ganglioneuroblastoma changes when there might be some role of chemotherapy. As it is a slow growing tumor, gross total surgical removal with preservation of organ functions is a feasible surgical option.<sup>2,3</sup>

In conclusion the ganglioneuroma arises from sympathetic ganglion which is a very rare disease and affects children more often than adults.<sup>1</sup> It is a benign, slow growing tumor and since it is difficult to distinguish from other tumors due to lack of image findings diagnosis is always made histologically.<sup>2</sup>

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