CASE REPORT

Phnx Med J. March 2024, Volume 6 No 1
DOI:10.38175/phnx.1300923

Adrenal Ganglioneuroma with Lymph Node Metastasis: A Rare Case Report

Lenf Nodu Metastazı Gösteren Adrenal Ganglionörom: Nadir Bir Olgu Sunumu

Nihal Kiremit, Erdem Arzu Taşdemir, Hatice Karaman, Merve Doğan, Turgut Seber

University of Health Sciences, Kayseri City Hospital, Department of Pathology, Kayseri, Türkiye.

ABSTRACT

Ganglioneuroma (GN) is a rare benign, well-differentiated neoplasia originating from the neural crest. Although it is most commonly seen in the posterior mediastinum, it can be observed in many areas including the adrenal gland. Lesions located in the posterior mediastinum and retroperitoneum are mostly seen in the pediatric population and adrenal ganglioneuromas are more common in the 4-5. decade. GN is a benign neoplasia but very rarely lymph node and distant organ metastases have been reported. In this study, a case of adrenal gland ganglioneuroma showing lymph node metastasis in a 3-year-old male patient is presented.

ÖZET

Ganglionöroma (GN) nöral krestten köken alan nadir görülen benign, iyi diferansiye bir neoplazidir. En sık posterior mediastende görülmekle birlikte adrenal bez de dahil olmak üzere birçok alanda izlenebilir. Posterior mediasten ve retroperiton yerleşimli lezyonlar daha çok çocuk popülasyonda, adrenal ganglionöromalar ise daha çok 4-5. dekadta izlenmektedir. Benign olmalarına rağmen çok nadir lenf nodu ve uzak organ metastazı bildirilmiştir. Bu çalışmada 3 yaşında erkek bir hastada lenf nodu metastazı gösteren, adrenal bez yerleşimli bir ganglionöroma olgusu sunulmuştur.

Keywords:
Ganglioneuroma
Adrenal
Lymph node
Metastasis

Anahtar Kelimeler:
Ganglinörom
Adrenal
Lenf nodu
Metastaz

INTRODUCTION

Ganglioneuromas are rare benign neoplasms that represent less than 5% of adrenal masses and develop from the neural crest. It consists of ganglion cells, mature Schwann cells, and neural fibers (1). Ganglioneuromas may develop spontaneously or by maturation of more immature neuroblastic tumors (2). It develops mainly from the posterior mediastinum and retroperitoneum. Adrenal ganglioneuromas are rare tumors that make up 20% of all ganglioneuromas (3). The median age at diagnosis is 35.3 (13-59)(4). Adrenal ganglioneuromas are usually asymptomatic and hormonally silent. Although it is discovered incidentally in 66%, they may present with abdominal discomfort, hypertension, headache, palpitation, menstrual irregularity (4).

Despite the fact that these tumors are benign, lymph node and distant organ metastases have been reported very rarely (3,5,6,7,9,11-14).

CASE

A mass in the left adrenal gland was detected in the computed tomography (CT) imaging of a 3-year-old male patient who had no previous known disease and applied to an external center due to bloody diarrhea caused by rotavirus infection. The case was referred to the pediatric oncology department with a preliminary diagnosis of neuroblastoma. On magnetic resonance imaging, a smooth-contoured solid-weighted mass containing millimetric cystic areas was observed in the left adrenal tract, measuring 41x33x52 mm (Figure 1).

There was no significant restriction in diffusion in the homogeneously enhanced mass after intravenous contrast

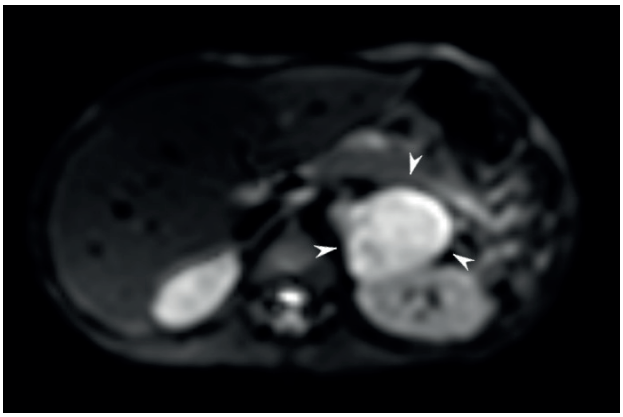

Figure 1: Trace diffusion-weighted transverse MRI shows a large hyperintense mass in the left adrenal tract (arrowheads).

Correspondence: Nihal Kiremit, Şeker Mah. Muhsin Yazıcıoğlu Bulvarı No:77 Kocasinan/Kayseri 38080, Türkiye.
E-mail: niihalkaya@gmail.com
Cite as: Kiremit N, Taşdemir EA, Karaman H, Doğan M, Seber T. Adrenal Ganglioneuroma with Lymph Node Metastasis: A Rare Case Report. Phnx Med J. 2024;6(1):40-43.
Received: 23.05.2023 **Accepted:** 18.12.2023 **Online Published:** 22.01.2024

agent. Therefore, it was evaluated primarily in favor of benign/mature neurogenic tumor (ganglioneuroma, ganglioglioma, etc.). In the operation performed on the patient with normal laboratory values, samples were taken from the paraaortic lymph nodes near the renal vein for staging and the total excision of the well-circumscribed mass.

Macroscopically, 2 different mass excision materials, the largest 5.5x3x3.5 cm and the smallest 3.5x2x0.5 cm, and 2 lymph node-registered tissues measuring 1.5x1.2x0.6 cm and 0.6x0.5x0.6 cm were observed.

Histopathological examination revealed tumoral infiltration surrounded by a connective tissue capsule. The tumor consisted of schwann cells and ganglion cells in the background containing varying degrees of collagen and myxoid areas (Figure 2). Schwann cells are separated by small fascicles and loose myxoid stroma. Interspersed small and large groups of ganglion cells were observed. All of the ganglion cells were mature with compact eosinophilic cytoplasm, single, eccentric nuclei and prominent nucleoli (Figure 3). In between, lymphoid cells forming lymphoid follicle structures were observed. No blastomatous component was observed. One lymph node adjacent to the tumor in an area near the tumor areas was observed to be metastatic (Figure 4). 2 lymph nodes sent separately were found to be reactive.

Immunohistochemical studies showed positive staining with S100, NSE, synaptophysin, neurofilament in Schwann cells and stroma. Positive staining with S100, synaptophysin, NSE, chromogranin A was obtained in ganglion cells. Low proliferation was observed with

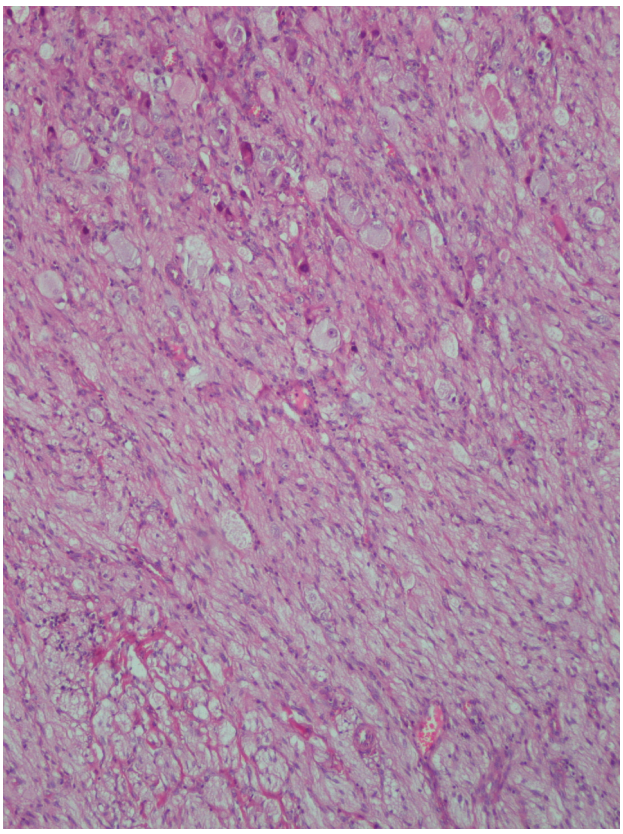

Figure 3: Mature ganglion cells with eosinophilic cytoplasm, eccentric nuclei and prominent nucleoli (HEx100).

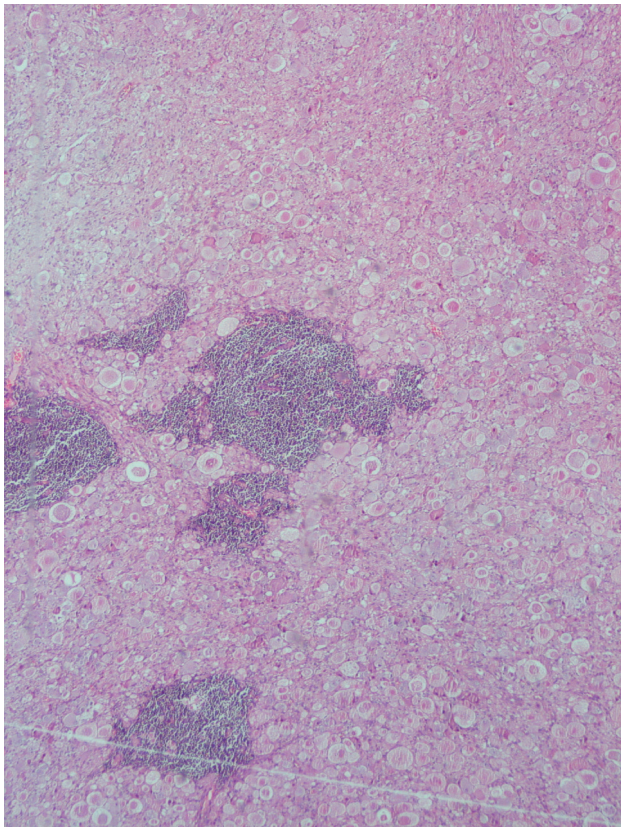

Figure 2: Tumoral infiltration consisting of schwann cells and ganglion cells (HEx40).

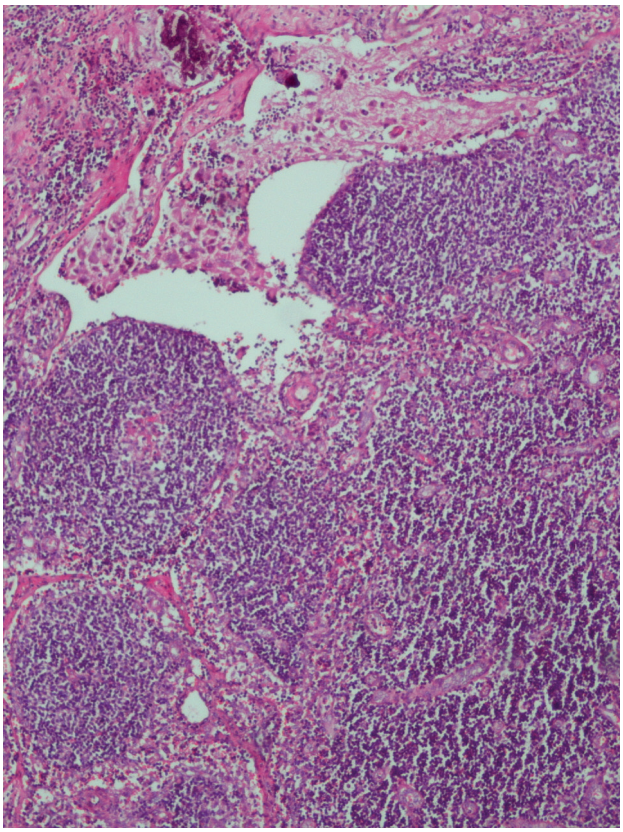

Figure 4: Metastatic lymph node (HEx100).

Table 1: Metastatic ganglioneuromas in the literature.

Patient	Age	Gender	Site	Symptoms	Size	Location of Metastasis
1	31	Male	Adrenal	Incidental	10 cm	Liver
2	27	Male	Retroperitoneum	Left upper qadrant and epıgastrıc pain	Not reported	Lymph node
3	43	Male	Retroperitoneum	Upper abdominal pain	25 cm	Liver (PNST)
4	3 yrs 10 mo	Female	Toracic	Tachypnea and left hemithorax	Not reported	Lymph node
5	30	Male	Adrenal	Abdominal pain, early satiety, nausea	30x18x13 cm	Retroperitoneum (PNST)
6	8	Male	Adrenal	Autopsy case	Not reported	Liver and spleen
7	52	Female	Retroperitoneum	Dyspeptic symptoms	Not reported	Lymph node
8	13	Female	Parafarengeal	Swelling on the left side of the neck	3.5x4x8 cm	Multifocal bone metastases
9	2 yrs 1 mo	Male	Adrenal	Swelling of legs	243 ml	Soft tissue metastases in buttocks and legs
10	3 yrs 8 mo	Female	Toracic	Fever and cough	173 ml	Lymph node
11	5	Female	Abdominal	Abdominal paın	480 ml	Lymph node

PNST: peripheral nerve sheath tumor

Ki67. Histochemically, positive staining was observed in myxoid areas. The case was diagnosed as Schwannian stroma rich mature ganglioneuroma.

No residue-recurrence was detected in the follow-up of the patient who underwent total resection.

DISCUSSION

Due to the frequency of using medical imaging methods, there has been an increase in the number of adrenal incidentilomas (8). Adrenal ganglioneuromas should be kept in mind in the differential diagnosis of adrenal masses. Ganglioneuromas most commonly develop in the thoracic (41.5%), abdominal non-adrenal (37.5%) and 21% of the adrenal regions (3). Primary GN occurs at a slightly older age than neuroblastomas.

In a study of 42 cases, the median age of ganglioneuromas located in the adrenal region was 35.3 (13-59)(4). In another study, the median age was 35 (19-73)(1). In this case, we presented an incidentally detected adrenal ganglioneuroma in a 3-year-old male patient. Although GN in adrenal localization is seen at an older age, there are cases reported in the pediatric population (3,13). In the literature, In a study of 49 cases conducted by Goerger et al. ; 9 out of 10 adrenal localized cases were children (<10 years old) (3). GN are benign neoplasms and are usually asymptomatic. In cases with symptoms, the findings depend on the compression effect of the tumor. Rarely, it depends on the vasoactive peptides secreted by the tumor. Although our case was detected incidentally, the patient did not have any tumor-related symptoms. Ganglioneuromas are benign neoplasms but distant organ metastases (7,13,14) and lymph node metastases (3,5,6,9) have been reported rarely.

In the literature, 12 GN cases together with our case have metastasized (Table 1). Five of them are metastatic GN cases with adrenal localization. Seven of these cases showed lymph node metastasis. Five (5/12) of the cases in the literature are female and 7 cases are male. Since lymph node metastasis was also observed in our case, it should be kept in mind that although ganglioneuromas are benign lesions, they may rarely present with metastasis.

The prognosis after total excision in ganglioneuromas is excellent (3,7). However, local recurrence and malignant peripheral nerve sheath tumor (PNST) transformations have been reported (11,12). Therefore, long-term follow-up of the case after total excision of the lesion is important. In the latest World Health Organization (WHO) classification of ganglioneuromas, there are two histological subtypes, mature GN and maturing GN. Our case was a mature ganglioneuroma rich in stroma.

CONCLUSION

In conclusion, ganglioneuromas should be considered in childhood adrenal tumors. Although GN is benign neoplasms, it should be kept in mind that very rarely, they have the potential for malignant transformation and metastasis to localizations such as lymph nodes, liver, spleen, and soft tissue.

Conflict of Interest: No conflict of interest was declared by the authors.
Ethics: The patient informed consent form was obtained.
Funding: There is no financial support of any person or institution in this research.
Approval of final manuscript: All authors.
Presentsation: This case was presented as a poster presentation at the National Pathology Congress on 25-29 October 2023.

REFERENCES

1. Iacobone M, Torresan F, Citton M, Schiavone D, Viel G, Favia G. Adrenal ganglioneuroma: The Padua Endocrine Surgery Unit experience. Int J Surg. 2017;41 Suppl 1:S103-S108. DOI: 10.1016/j.ijsu.2017.03.086.
2. Ambros IM, Zellner A, Roald B, Amann G, Ladenstein R, Printz D, el al. Role of ploidy, chromosome 1p, and Schwann cells in the maturation of neuroblastoma. N Engl J Med. 1996 Jun 6;334(23):1505-11. DOI: 10.1056/NEJM199606063342304.
3. Geoerger B, Hero B, Harms D, Grebe J, Scheidhauer K, Berthold F. Metabolic activity and clinical features of primary ganglioneuromas. Cancer. 2001;91(10):1905-13. DOI: 10.1002/1097-0142(20010515)91:10<1905::aid-cncr1213>3.0.co;2-4.
4. Xie J, Dai J, Zhou WL, Sun FK. Adrenal Ganglioneuroma: Features and Outcomes of 42 Cases in a Chinese Population. World J Surg. 2018;42(8):2469-2475. DOI: 10.1007/s00268-018-4499-8.
5. Srinivasan R, Koliyadan KS, Krishnand G, Bhat SS. Retroperitoneal ganglioneuroma with lymphnode metastasis: a case report. Indian J Pathol Microbiol. 2007;50(1):32-5.
6. Hettiarachchi M, Dharmadasa C, Wijeyananda A, Hettiarachchi K, Samarasinghe B. Giant thoracic ganglioneuroma with lymph node infiltration of a child: a case report. Ann Pediatr Surg. 2020;16(1):1-4. DOI: 10.1186/s43159-020-00066-4.
7. Jung HR, Kang KJ, Kwon JH, Kang YN. Adrenal ganglioneuroma with hepatic metastasis. J Korean Surg Soc. 2011 Apr;80(4):297-300. DOI: 10.4174/jkss.2011.80.4.297.
8. Qing Y, Bin X, Jian W, Li G, Linhui W, Bing L, et al. Adrenal ganglioneuromas: a 10-year experience in a Chinese population. Surgery. 2010 Jun;147(6):854-60. DOI: 10.1016/j.surg.2009.11.010.
9. Lebby E, Kwan D, Bui TL, O'Connell R, Seetharaman M, Houshyar R. Retroperitoneal ganglioneuroma with nodal involvement in an adult patient with human immunodeficiency virus: a case report and review of the literature. J Med Case Rep. 2021 Dec 28;15(1):634. DOI: 10.1186/s13256-021-03134-4.
10. Shawa H, Elsayes KM, Javadi S, Morani A, Williams MD, Lee JE, et al. Adrenal ganglioneuroma: features and outcomes of 27 cases at a referral cancer centre. Clin Endocrinol (Oxf). 2014 Mar;80(3):342-7. DOI: 10.1111/cen.12320.
11. Meng ZH, Yang YS, Cheng KL, Chen GQ, Wang LP, Li W. A huge malignant peripheral nerve sheath tumor with hepatic metastasis arising from retroperitoneal ganglioneuroma. Oncol Lett. 2013 Jan;5(1):123-126. DOI: 10.3892/ol.2012.961.
12. Chandrasoma P, Shibata D, Radin R, Brown LP, Koss M. Malignant peripheral nerve sheath tumor arising in an adrenal ganglioneuroma in an adult male homosexual. Cancer. 1986;15;57(10):2022-5. DOI: 10.1002/1097-0142(19860515)57:10<2022::aid-cncr2820571023>3.0.co;2-d.
13. Chen GH, He JN. Malignant ganglioneuroma of adrenals with metastasis to liver and spleen. Chin Med J (Engl). 1986 Mar;99(3):261-3.
14. Salimov A, Süslü N, Kuşçu O, Süslü AE, Akyol MU, Gököz Ö, et al. Parapharyngeal giant ganglioneuroma with multifocal bone involvement in a pediatric female patient. Turk J Pediatr. 2016;58(6):669-674. DOI: 10.24953/turkjped.2016.06.016.