Hind Brain in Mature Cystic Teratoma Ovary: A Case Report

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ARTICLE INFO
Article History
Submitted: 20 December 2023
Accepted: 2nd January 2024
Published: 8 February 2024

Source of support: None
Conflict of Interest: None

ABSTRACT

Mature cystic teratoma is the commonest benign neoplasm occurring in the ovary, comprising for 27-44% of all ovarian tumors and most cases in reproductive age women. Here we report the case a 26-year-old female presented with complain of lower abdominal pain for six months which on ultrasound evaluation and Computed Tomography showed dermoid cyst measuring 7x5.3x5 cm with non-enhancing soft tissues predominantly containing fat and few calcifications. Microscopic examination showed a cyst wall lined with stratified squamous lining including adnexal structures (sebaceous glands) and glial tissue, along with a focal area lined by respiratory epithelium. There was no immature component. Well-differentiated cerebellum within ovarian teratoma is extremely rare entity in literature.

Keywords: Cerebellum; Mature cystic Teratoma; Ovary.

INTRODUCTION

Mature cystic teratoma is the commonest benign neoplasm occurring in the ovary, comprising for 27-44% of all ovarian tumors and most cases in reproductive age women[1], and is composed of mature-appearing derivatives of two or three embryonal layers. Ectodermal derivatives are seen in almost all mature teratomas[2]. Organized mature neural tissue is a common component. Glial tissue is the most prevalent neural component of mature teratoma, and well-organized cerebrum and choroid plexus are also present[2]. However, presence of cerebellum is extremely rare in ovarian mature teratomas. The first case reported of a well-differentiated cerebellum within mature teratoma was by Askanazy in 1907.[3]

CASE REPORT

Twenty six years lady, resident of Terai belt of Nepal presented with complain of lower abdominal pain for six months. Ultrasound scan showed a well-defined heterogeneously echogenic cystic lesion with fat fluid level and subsequent contrast enhanced CT confirmed the diagnosis of dermoid cyst showing non-enhancing soft tissue components predominantly containing fat and few calcifications (Fig 1a, 1 b). The dermoid cyst was 7x5.3x5cm in size. She underwent conservative oophorectomy. Specimen was received which on cutting reveal predominantly cystic areas with pasty material. Representative sections were taken along with areas with thick cystic wall as well.

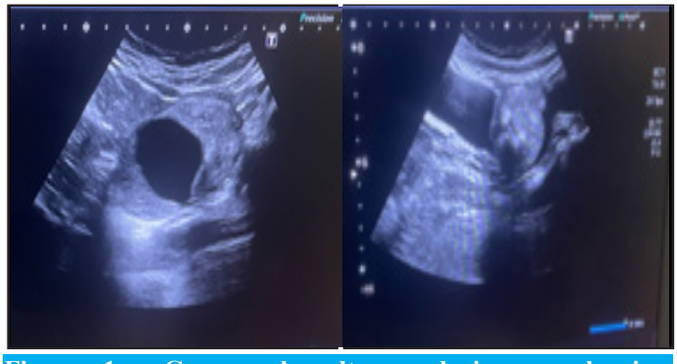

Figure 1a: Grey scale ultrasound images showing heterogeneously echogenic cystic lesion with fat-fluid level & calcification.

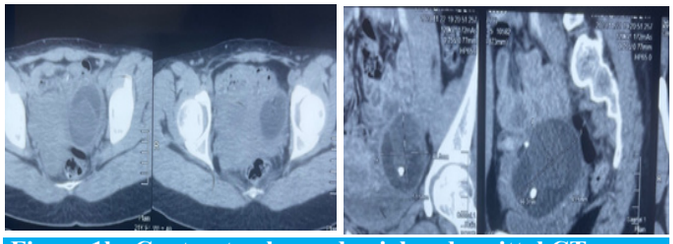

Figure 1b: Contrast enhanced axial and sagittal CT images showing predominantly fat containing heterogenous cyst with calcification and non-enhancing soft tissues.

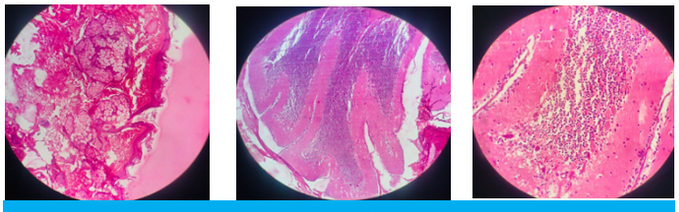

Figure 2a **Figure 2b** **Figure 2c**

Figure 2a: Low power view of cyst with squamous lining and abundant adnexal glands. Figure 2b: Lower power view of mature cerebellum tissue Figure 2c: Cerebellar tissue composed of an outer hypocellular molecular layer, Purkinje cell layer, and inner hypercellular granular cell

Microscopic examination of the hematoxylin and eosin (H&E)-stained sections (Fig. 2a,2b,2c) showed a cyst wall lined by stratified squamous lining including adnexal structures (sebaceous glands) and glial tissue, along with a focal area lined by respiratory epithelium. There was no immature component noted even after extensive sampling. However, a well-differentiated cerebellar tissue was seen which was composed of an outer hypocellular molecular layer, Purkinje cell layer, and inner hypercellular granular cell layer. A final diagnosis of a mature cystic teratoma with well-differentiated cerebellum was established. Postoperatively, the patient was doing well and was discharged in a stable condition.

DISCUSSION

Mature teratoma is the most common Germ Cell Tumor, which represents 95% of GCTs and 20% of ovarian tumors, making it the most common ovarian neoplasm in children and teenagers however it can occur in any age group.[4] Teratomas are not merely a haphazard admixture of various types of mature or immature tissuecomponents, but these tissue components are formed under the definite control of primary and subsidiary organizing factors and exert inductive effects upon the surrounding tissues.

Teratoma is classified into mature and immature teratoma.[5] Immature teratoma is defined as having immature elements from any of the three germ layers, commonly with neural origin, but for grading, only the neuroectodermal tissue is considered. Immature teratoma is the most common malignant ovarian germ cell tumor, and its histological grading plays an integral role in the management and prognosis of the patient. Therefore, extensive sampling of the solid areas in teratoma specimens is extremely crucial, which could exhibit another germ cell tumor or an immature component.

In addition to that malignant transformation is rare in MCT which is at a rate of 1–2%, and various malignancies have been reported in teratomas, with squamous cell carcinoma (SCC) being the most common. Mature teratomas can be treated conservatively by cystectomy or salpingo-oophorectomy[2]. In our case the tumor was completely resected. The case was reported because, although the tumor itself is very common, the presence of well-differentiated cerebellar tissue is extremely rare in mature teratomas. Furthermore, to the best of our knowledge after an extensive literature review, only 23 cases have been reported earlier.

CONCLUSION

We report this case of well-differentiated cerebellum within ovarian teratoma to expand the documentation of cases of this extremely rare entity in literature. Sometimes this finding represents a diagnostic challenge to the pathologist due to its rarity and its similarity to immature teratoma, hence should be aware.

REFERENCES

1. Dominguez-Rosado I, Michel J, Ortiz-Hidalgo C. Ovarian mature cystic teratoma exhibiting well differentiated cerebellum in a 14-year-old female. Pediatr Dev Pathol 2005; 8: 247-249. [PubMed| Full Text| DOI]

2. Mitsuaki Ishida, Muneo Iwai, Keiko Yoshida, Akiko Kagotani, Hidetoshi Okabe. Well-differentiated cerebellum within a mature cystic teratoma of the ovary Int J Clin Exp Pathol 2014;7(3):1255-1257 [PubMed| Full Text]

3. Askanazy M. Die Teratome nach ihrem Bau, ihrem Verlauf, ihrer Genese und im Vergleich zum experimentellen Teratoid. Verhandlungen der Deutschen Pathologischen Gesellschaft. 1907;11:39–82

4. Vang R, Zaloudek C. Female Genital Tumours WHO Classification of Tumours, 5th Edition, Volume 4 page 119-120 [Full Text]

5. Ashley DJB. Origin of teratomas. Cancer 1973; 32:390–394. [Full Text| DOI]

Post B, Tijssen MA, et al. Systematic clinical approach for diagnosing upper limb tremor. J Neurol Neurosurg Psychiatry. 2020;91(8):822-30. [PubMed|Full text|DOI]

4. Brambilla P, Cipriani A, Hotopf M, Barbui C. Side-effect profile of fluoxetine in comparison with other SSRIs, tricyclic and newer antidepressants: a meta-analysis of clinical trial data. Pharmacopsychiatry.2005;38(2):69-77.[PubMed|Fulltext|DOI]

5. Martinez AD, Benassinni O, Ontiveros A, Gonzalez S, Salin R, Basquedano G, et al. A randomized, open-label comparison of venlafaxine and fluoxetine in depressed outpatients. Clin. Ther. 1998; 20(3):467-76. [PubMed|Full text|DOI]

6. Revet A, Montastruc F, Roussin A, Raynaud JP, Mestre ML, Nguyen TTH. Antidepressants and movement disorders: a postmarketing study in the world pharmacovigilance database. BMC Psychiatry. 2020;20:308. [PubMed|Full text|DOI]

7. Morgan JC, Kurek JA, Davis JL, Seth KD. Insights into Pathophysiology from Medication-induced Tremor. Tremor Other Hyperkinet Mov. 2017;7. [PubMed|Full text|DOI]

8. Arbaizar B, Gómez-Acebo I, Llorca J. Postural induced-tremor in psychiatry. Psychiatry Clin Neurosci. 2008;62(6):638-645. [PubMed|Full text|DOI]

9. Grimes DA. Tremor: Easily seen but difficult to describe and treat. Can. J. Neurol. Sci. 2003;30(Suppl. 1):59–63. [PubMed| DOI]

10. Carroll JA, Jefferson JW, Greist JH. Treating tremors induced by lithium. Hosp Community Psychiatry. 1987; 38:1280-88. [PubMed| DOI]

11. Naranjo CA, Busto U, Sellers EM, Sandor P, Ruiz I, Roberts EA, et al. A method for estimating the probability of adverse drug reactions. Clin Pharmacol Ther 1981; 30: 239-45. [PubMed|Full Text|DOI]

12. Mörkl S, Seltenreich D, Letmaier M, Bengesser S, Wurm W, Grohmann R, et al. Extrapyramidal reactions following treatment with antidepressants: Results of the AMSP multinational drug surveillance program. World J Biol Psychiatry.2020;21(4):308-16. [Full Text|DOI]

13. Madhusoodanan S, Alexeenko L, Sanders R, Brenner R. Extrapyramidal symptoms associated with antidepressants-a review of the literature and an analysis of spontaneous reports. Ann Clin Psychiatry. 2010;22(3):148-56. [PubMed |Full Text]

14. Sertaç Ak, Anıl Yağcıoğlu AE. Escitalopram-induced Parkinsonism. Gen Hosp Psychiatry. 2014;36(1):126.e1-2. [PubMed |Full Text |DOI]