Case Report

Gliomatosis peritonei arising in setting of immature ovarian teratoma: A case report

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Abstract

Gliomatosis peritonei(GP) is an infrequent occurrence, exclusively associated with a mature or immature teratoma. GP is defined as miliary implantation of glial tissues on the surface of the visceral or parietal peritoneum with secondary maturation into glial nodules of 1-10mm. Robboy and Scully have suggested three possible sources of GP: 1) deposition of immature neural tissue with consequent maturation, 2) lymphogenous metastasis, and 3)mature glial cells extruded through a defect in the capsule of the primary tumor. Immature teratoma comprises only 1% of all ovarian teratoma and 20% of malignant ovarian germ cell tumor. This report discusses the case of a 12years old girl with a large immature teratoma in left ovary with gliomatosis peritonei and the diagnostics, histologic, surgical modalities and management.
Key Word: immature ovarian teratoma.

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CASE REPORT

A 12years year old girl presented with the chief complaints of pain abdomen and rapidly enlarging lump in the lower abdomen over the last 1month. Her medical and family history were unremarkable. Local examination revealed a large mass in the abdominopelvic region. Rest of the general and systemic examination was within normal limits. Ultrasonography revealed a solid cystic mass of size 11×8cm in left ovary. Serum tumor markers revealed elevation of CA 125(120U/ml). Other tumor markers like carcinoembryonic antigen CEA(3.38ng/ml), alpha-fetoprotein(AFP) level 0.899IU/ml, beta human chorionic gonadotrpin(ß hcg) level 2.39mu/ml.

Laparotomy revealed a huge left ovarian mass measuring 12 ×10cm along with multiple, firm greyish white 0.2-1.0cm nodules on peritoneum, omentum and pouch of Douglas. Uterus and right ovary and tubes were normal. The patient underwent laparotomy with left sided ovariotomy excision of nodules on peritoneal surface, omentum, and pouch of Douglas.

On cut section, tumor contains party cystic and partly solid components with bone and cartilage.

Frozen section is carried out, it revealed features of teratoma comprising skin, adipose tissue(f1) foci of mature cartilage and few foci of primitive neuroepithelium (f2) On histopathological examination revealed immature teratoma and the nodules from all the three sites(peritoneum, omentum and pouch of Douglas) contained mature glial tissue. A diagnosis of immature teratoma (grade2) with GP was rendered.

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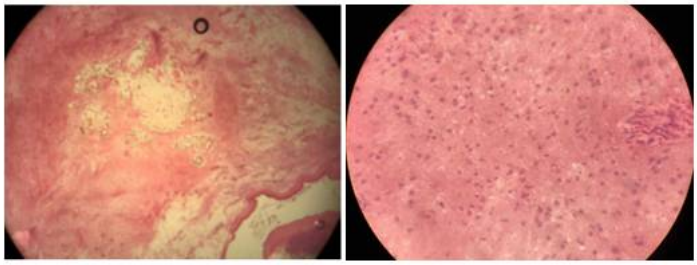

Figure 1

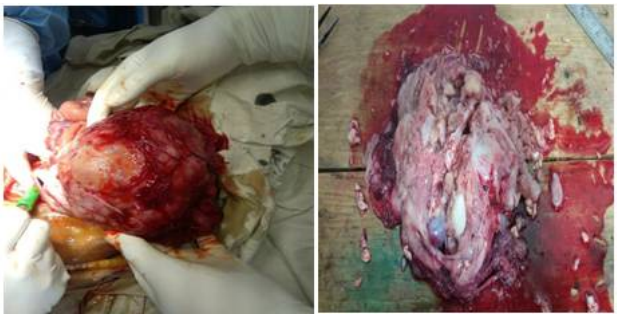

Figure 2

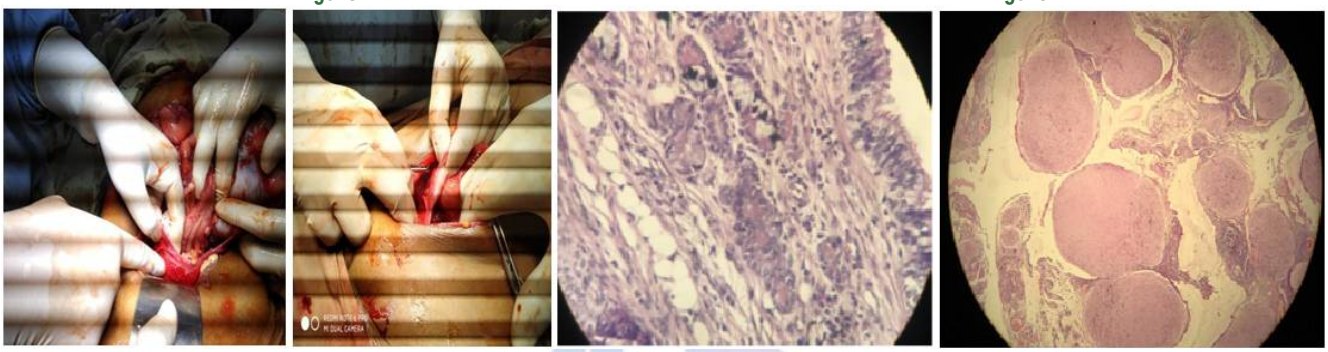

Figure 3 Figure 4

Figure 1: Gross picture; **Figure 2:** Cut section; **Figure 3:** Peritoneal Nodules**; Figure 4:** Normal right side tubes and ovary; **Figure 5:** Immature teratoma showing neural rosette; **Figure 6:** Gliomatosis Peritonei showing nodules of glial tissue

DISCUSSION

According to WHO, immature teratoma (IT) defined as a teratoma containing a variable amount of immature embryonal type neuroectodermal tissue. Tumor grading is based on the amount of immature neuroepithelium presence. [3]

Gliomatosis peritonei (GP) can be defined as the metastatic implantation of glial tissue on the surfaces of visceral or parietal peritoneum. The mechanism of implantation is unknown, and two theories to explain the origin of GP have been proposed. According to one of the theories, glial implants arise from the teratoma,whereas the other proposes that pluripotent stem cells in the peritoneum or subjacent mesenchyme undergo glial metaplasia. [4]

The nodules of glial implants are usually 1-10mm in size, localiizing in the perital and visceral peritoneum and are grossly in distinguishable from tuberculosis or carcinomatosis. Microscopically, GP may consist of mature or immature glial tissues. The mature nature of the implants generally implies a favourable prognosis, even in patients with immature ovarian teratoma.

Microscopically the nodules are composed of mature glial cells regardless of the nature of the teratoma. The mature nature of glial tissue is reflected by its immunopossitivity for vimentin and neural marker like neuron specific enolase(NSE) Glial fibrillary acidic protein(GFAP) and S100.

These peritoneal implants may undergo fibrosis and eventually disappear or sometimes persists without any morphological changes. In rare circumstances, they can undergo malignant transformation.

Regarding treatment, therapy should be directed by the grade of the primary tumor and not by the glial implants if they are extensively sampled and all are mature. The treatment mode for IT and GP is complete surgical resection, which is also useful for identifying the presence or the absence of the malignant lesions and for preventing malignancy transformation of the GP residual fragments. Potential for its recurrence is high, and therefore it requires a careful monitoring of residual lesions using scanning imaging such as computed tomography.

There is no clear guidance as regards how long these patients should be followed up. England *et al*. proposed MRI and tumor markers for the monitoring of patients with immature ovarian teratoma and mature glial tissue implants. CT and ultrasonography have also been proposed for monitoring of the disease.

A favourable prognosis is determined by the following: 1) histological nature of the glial tissue implants that are completely mature regardless of the nature of immature ovarian teratoma; and 2) loss of proliferative activity of the peritoneal implants. Paradoxically, patients who have immature teratoma in association with mature glial implants appear to have much improve prognosis. This statement holds true only if Stringent criteria for diagnosis

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of GP are adhered to, as proposed by Thurlback and Scully, a) peritoneal surface, omentum and diaphragmatic surface must be extensively sampled histologically and, b) its of the sample implants should be composed exclusively or almost exclusively grade 0 glial tissue. If these two condition are met, the prognosis of the disease is excellent.

CONCLUSION

A mature gliomatosis implant constitutes a harmless situation with a good prognosis, even when associated with an immature teratoma of the ovary. Proper surgical excision and post operative chemotherapy with (BEP) bleomycin, etoposide and cisplatinum should be provided minimum of 3cycles. A close follow-up should be carried out ranging from 6months to 78months with median follow up of 33months.

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