CHAPTER 22

MEDIASTINAL GERM CELL TUMORS

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Germ cell tumors (GCTs) are rare malignancies originating from the reproductive cells of ovaries or the testis. They primarily appear in gonadal location but they may also arise outside the gonads, with an incidence of 1% to 5 %. They originate from the remnants of misplaced primordial germ cells, all through their mid-line path of embryonic migration, and are called "extragonadal germ cell tumors". The most common locations of extragonadal GCTs are mediastinum, retroperitoneal area, suprasellar area, and the pineal gland. Tumors arising in the mediastinum are called primary mediastinal (PM) GCTs and they are the most frequent type of extragonadal GCTs [1-4]. These tumors are typically situated in the anterior compartment, around the thymic loge, although lesions arising from the posterior mediastinum, pericardium, and aortic adventitia have been reported. Germ cell tumors with benign behavior are more common in females and children, while the vast majority of malignant mediastinal germ cell tumors occur in older adolescent and adult male patients [2,5]. It has been reported that almost 90% of PMGCTs are diagnosed in men of 3rd-5th decades, with tumors commonly located in the anterior mediastinum [6].

CLASSIFICATION

PMGCTs are a group of tumors very distinct from each other and show wide range of variance in terms of histopathology, clinical features and treatment modalities. It is typical to divide those tumors into mainly two categories; seminomas and non-seminomatous GCTs. Non-seminoma tumors include yolk sac tumors, embryonal carcinoma, choriocarcinoma, mature and/or immature teratoma, and mixed tumors.

Table 1. Classification of primary mediastinal germ cell tumors

1- Seminomas
2- Non-seminomatous germ cell tumors

• Teratoma
  • Mature
  • Immature
  • With malignant component (teratocarcinoma)
  • Type I - with another GCT
  • Type II - with a malignant epithelial neoplasm
  • Type III - with a malignant mesenchymal component
  • Type IV - any combination of previous types (I-II-III)
• Yolk sac tumor
• Embryonal carcinoma
• Choriocarcinoma
• Combined germ cell tumor *

* Must be the combination of any of the above tumors without any teratomatous components. If any teratomatous rudiments are present, then the tumor should be classified as within the different types (Type I-IV) of teratomas.

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remains in around 30-50% of patients. Therefore, post-chemotherapy resection of residual tumor, especially for primary mediastinal non-seminoma GCTs, is essential in order to decrease recurrence and improve the overall effectiveness of the treatment.

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