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The Rarest Diseases: Learning More about Thymic Carcinoma

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Description

Thymic epithelial tumours are classified as a rare disease by the National Institutes of Health, with a reported incidence of 3.2 per 1,000,000 and so affecting less than 200,000 people in the United States. Because uncommon diseases were included in the Orphan Drug Act of 1983, these are called "orphan diseases." Thymic carcinoma is a kind of thymic epithelial tumour that accounts for around one tenth of all thymic epithelial cancers. The remarkable rarity of this rarest of rare diseases, as well as the retrospective acquisition of most of the information about thymic carcinoma, make it difficult to gain and extend our knowledge of this orphan disease.

A subset analysis of the thymic epithelial tumour database by the European Society for Thoracic Surgery produced a "limited data" subset of 1042 patients with thymic carcinoma treated in 67 of 73 centers. This is the largest thymic cancer case ever reported; however, the pool from which these patients were derived is unknown, thus any epidemiologic analysis is impossible. In this retrospectively constructed data set, there is no doubt about the granularity of data and the substantial missing data, as age was reported in 85 percent of patients, pathologic Masaoka stage in 80 percent of patients, World Health Organization histology in 68 percent of patients, and clinical Masaoka stage in 39 percent of patients. The following qualification was usually needed for this variable data collection: The number of cases that can be discussed for each variable and test is given.

There is no specific way for dealing with missing data. A variable cannot be retrieved and examined if it is not recorded, as it is with all retrospective data. The presence of regional lymph node metastases is an example of a potentially crucial unreported variable. Surprisingly, only 20 people had this problem. The analysis regrettably states that "the function of lymph node involvement could not be explored due to the small number of patients with positive nodes and also as there is no systematic practice of lymphadenectomy or lymph node sampling. A careful focus on the analysis of outcomes may help to grasp the depth and scope of the difficulties faced in this project. Death status is the most indisputable of the outcome measures-death and recurrence-but it was only known in 80% of cases. The alternative outcome is recurrence, which is a soft end point. This component of the analysis is debatable because no protocol for monitoring recurrence was used. The potential difficulty of clinical detection of recurrence in radiated and surgical fields further complicates this outcome measure. The problem of missing data makes it difficult to know the impact of this clinical problem.

It was used in 78 percent of the 92 percent of patients for whom the status of radiation therapy use was known, and in 72 percent of all 1042 study patients regardless of treatment status. Radiation therapy was used in 72 percent of cases, according the investigators; therefore missing data were handled in the study as if radiation therapy had not been employed. In interpretation of the results, be aware of these examples, as well as other data peculiarities and analysis challenges.

Only predictors of overall survival (R0 resection and use of any radiation therapy) and predictors of recurrence (use of any radiation therapy and male gender) were identified despite a large number of events (deaths and recurrence). This is in marked contrast to the European Society for Thoracic Surgery's analysis of the data, which was recently observed. Only 229 patients with more detailed information had more conclusive and convincing results. Poorer survival was related to R1 or R2 resections (P 0.0001), advanced stage (P 14.02), and failure to employ postoperative adjuvant radiation therapy (P 14.03).

Conclusion

This is the first attempt to put together such an international thymic carcinoma database. Many problems in prospective data collection can be addressed. The findings are predictable, and statistics aren't required to confirm that the use of effective local therapies is associated with increases survival. Recurrence associations should be taken with a grain of salt. To advance our understanding of thymic carcinoma in the future, we will need to borrow from our understanding of related but more common tumours from other sites, as well as carefully compiling and analyzing the little data available. Participation and collaboration with rare illness efforts will intensify this effort.