

Natural history of juvenile thyroid cancer and overdiagnosis

Thyroid cancer in young people often shows metastasis and recurrence. However, the prognosis is excellent, which puzzled researchers for a long time. A part of this mystery has been understood from the recent accumulation of clinical evidence.

Papillary thyroid microcarcinomas (PTMs) are found frequently in adults after their thirties. They hardly grow after middle age, and a considerable number of them decrease in size. In addition, during the observation trails, no patient died from thyroid cancer, and no patient experienced anaplastic transformation. The results of large-scale screening for thyroid cancer in young people in Fukushima Prefecture show that the frequency of thyroid cancer, which can be found only by ultrasound, increases rapidly after teens, and that the growth of these cancers slows down as they grow. Therefore, its growth is speculated to stop in the future.

From this evidences, the natural history of thyroid cancer may be as follows. Most thyroid cancers occur in childhood and rapidly grow in their 10s to 20s, causing metastasis and invasion. A small proportion of these grow to a size that requires treatment in early life, but the rest cease to grow, remaining as a PTM throughout the lifetime. Thyroid cancer, which leads to cancer death in middle-aged and older people, is fundamentally different from thyroid cancer in the young or PTM. We distinguish this type of cancer that occurs in young people from conventional thyroid cancer and call it juvenile thyroid cancer. It is also designated as self-limiting cancer (SLC). SLC metastasizes and invades like thyroid cancer that is seen in the middle-aged and older patients. However, due to its limited growth ability, it rarely kills patients.

Early diagnosis of SLC is prone to cause the harm of overdiagnosis, while it does not improve prognosis or quality of life. Besides, in young patients, because a small cancer is likely to be at its rapidly proliferating and spreading phase, a small surgery for small cancer can result in an increase in the recurrence rate. It has been said that early diagnosis and early treatment are the golden standards for cancer. However, SLC's existence, the details of which have been clarified for the first time in thyroid cancer, overturned this common sense. We should be fully aware of the fact that in some cancers, early diagnosis can harm patients.

(Reference) Takano T. JAYAO 9:286-288, 2020.

Overdiagnosis of juvenile thyroid cancer: Time to consider self-limiting cancer.