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Management Strategies for Pulmonary Metastases Arising from Uterine Smooth Muscle Tumors of Uncertain Malignant Potential (Stump)

Shigeru Abe[1], Shiomi Ushida[1], Satoshi Ichigo[1], Kazutoshi Matsunami[1], Tsutomu Marui[2], Toshio Kasugai[2], Yuji Ito[3] and Atsushi Imai[1]*

[1]*Department of Obstetrics and Gynecology, Matsunami General Hospital, Japan*

[2]*Department of Thoracic Surgery, Matsunami General Hospital, Japan*

[3]*Department of Obstetrics and Gynecology, Ena Municipal Hospital, Japan*

***Corresponding author:** Atsushi Imai, Department of Obstetrics and Gynecology, Matsunami General Hospital, 185-1 Dendai, Kasamatsu, Gifu 501-6062, Japan

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ABSTRACT

Smooth muscle tumors of uncertain malignant potential (STUMP) are mesenchymal uterine tumors with malignancy levels intermediate between benign leiomyomas and malignant leiomyosarcomas. Reports of pulmonary metastases from STUMP are rare in the literature. The limited number of cases, coupled with variable recurrence patterns and diverse treatment strategies, complicates the formulation of definitive conclusions regarding prognostic factors or optimal therapeutic interventions. Complete surgical resection appears to be essential for the effective management of metastasizing STUMP. Estradiol promotes the proliferation of both uterine smooth muscle and STUMP cells, and antiestrogen therapies, employed as adjuvant treatment, have demonstrated the potential to decelerate or even reverse tumor progression.

Introduction

While the recurrence rate for STUMP ranges from 7% to 27%, it increases to 60–80% for leiomyosarcomas. Five-year overall survival rates have been reported between 70–90% for STUMP patients compared to 30–50% for those with leiomyosarcoma. When metastases are present, outcomes tend to be poor. Pulmonary metastases from STUMP, although rare, have been documented (Table 1). The uncertain malignant potential of STUMP often drives clinicians toward more aggressive management, including primary cytoreductive surgery and adjuvant therapies. This document aims to explore the management strategies for multiple pulmonary metastases from STUMP, highlighting the challenges inherent in treating these rare occurrences.

Table 1: Reported cases of pulmonary metastases from STUMP.

Author	Patient's age	After a hysterectomy (year)	Management for pulmonary metastasis	Outcome
Abe, et al. [5]	56	5	right upper lobectomy, no adjuvant therapy	died 3 months later due to rapid disease progression
Kotsopoulos, et al. [6]	51	3	lung biopsy, 14 cycles of chemotherapy	died 11 months later
Ciarrocchi, et al. [7]	63	14	left pneumonectomy, no adjuvant therapy	a strict follow-up
Esch, et al. [8]	59	4	right thoracic exploration and biopsy, and estrogen receptor antagonist therapy	no progression in size of the residual pulmonary lesion in the following 24 months
Berretta, et al. [9]	59	9	GnRHa and aromatase inhibitor	died 12 months later
Guntupalli, et al. [2]	52	13 months	pulmonary lobectomy followed by medroxyprogesterone acetate and GnRHa	no evidence of recurrence for 157 months

Note: Abbreviations: GnRHa, gonadotropin-releasing hormone agonist.

Management Procedure

Given the low incidence of pulmonary metastases, standardized treatment guidelines remain absent. Complete surgical resection is generally recommended for patients with metastasizing STUMP [1-4]. In one case, a pneumonectomy was performed due to ambiguous preoperative biopsy results, with the goal of maximizing survival. Some studies advocate for aggressive metastasectomy in conjunction with antihormonal therapies. Table 1 summarizes reported cases of pulmonary metastasis from STUMP: two patients underwent pulmonary surgery alone, while two others received surgery followed by adjuvant hormonal treatment. One patient received chemotherapy with multiple agents (epirubicin, cyclophosphamide, vincristine, docetaxel, bevacizumab, gemcitabine, cisplatin, ifosfamide) as an intensive intervention following lung biopsy. Estradiol promotes the growth of STUMP cells, and antiestrogen therapies can yield favorable outcomes by inhibiting progression and, in some cases, inducing regression [1-4]. Guntupalli et al. reported a case involving pulmonary lobectomy followed by medroxyprogesterone acetate and a gonadotropin-releasing hormone agonist (GnRHa).

While estrogen receptor antagonists have shown limited efficacy compared to GnRHa or aromatase inhibitors, progesterone suppresses the hypothalamic-pituitary-gonadal axis and reduces aromatase activity, contributing to the regression of pulmonary lesions [2-4]. The postmenopausal benign behavior of STUMP, along with its hormonal sensitivity, supports a watch-and-wait approach following histological confirmation, with a recommended follow-up period of at least ten years [1]. Given the unpredictable clinical course of STUMP and the potential for significant malignancy, patients require meticulous, long-term follow-up. Metastases cannot be ruled out, and the lungs appear to be a frequent target organ for metastatic spread [5-9]. Follow-up after primary hysterectomy should extend to at least 15 years, considering the often indolent growth pattern of STUMP tumors. Closer surveillance than annual examinations, potentially involving gynecologic oncologists, may be warranted. Additional research is essential to establish the recurrence rates and clinical behavior of STUMP tumors, given their rarity and the limited data on chemotherapy outcomes. Nevertheless, when metastases do occur, the prognosis remains poor.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Atsushi Imai. Biomed J Sci & Tech Res

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