

2023 대한심장혈관흉부외과학회

제55차 추계학술대회 & APELSO 2023

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Prognosis after surgical treatment of lung cancer with multiple ground-glass nodules: the effect of nodule characteristics



- Lung cancer with synchronous multiple ground glass nodules (GGN) are detected more commonly as the use of low-dose chest computed tomography screening is increasing .
- There is still no clear guideline for the management and surveillance of lung cancer with multiple GGNs.
- We analyzed the effect of tumor characteristics on long-term prognosis after surgical outcomes of lung cancer with multiple GGNs.

- Total of 284 patients who underwent pulmonary resection for the treatment of lung cancer with synchronous multiple GGNs from January 2013 to December 2019 were reviewed retrospectively.
- Patients were divided into three group according to the consolidation-tumor ratio (CTR) on computed tomography of dominant nodule.
 - PSN-1 group ($0 \leq \text{CTR} < 0.5$), PSN-2 group ($0.5 \leq \text{CTR} < 1$) and solid group ($\text{CTR} = 1$).
- Definition of dominant tumor – the most invasive tumor based on radiologic size and CTR.
- End points
 - Overall survival - entire population, subgroup analyses
 - Pattern of distribution of non-dominant nodules
 - Pattern of pulmonary resection
 - Prognosis of non-dominant nodules – progression rate, secondary treatment

| Table 1. Study population characteristics | |
|---|----------------|
| Characteristic | Result (n=284) |
| Age (y, mean±SD) | 64.71±9.62 |
| Sex | |
| Male | 113 (39.8%) |
| Never smoker | 191(67.3%) |
| Previous cancer history | 62 (21.8%) |
| No. of lesions | |
| 2 | 99 (34.9%) |
| 3 | 148 (52.1%) |
| 4 or more | 37 (13.0%) |
| Laterality | |
| Unilateral | 120 (42.3%) |
| Same lobe | 43 (15.2%) |
| Different lobe | 77 (27.1%) |
| Bilateral | 164 (57.7%) |
| CT image characteristics of dominant nodule | |
| Part-solid-1 (0≤CTR<0.5) | 114 (40.2%) |
| Part-solid-2 (0.5≤CTR<1.0) | 106 (37.3%) |
| Solid | 64 (22.5%) |

TREATMENT PATTERN

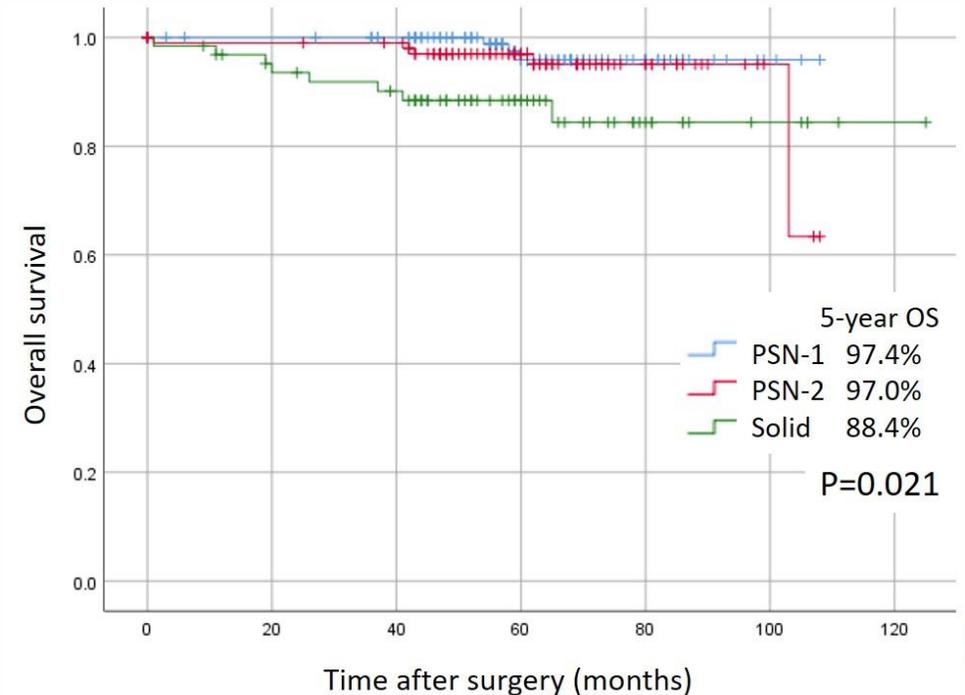


| Table 2. Postoperative outcomes | |
|---------------------------------|--------------------|
| Median f/u time | 60.7 months |
| 30-days mortality | 1 (0.3%) patient |
| Recurrence | 20 (7%) patients |
| Death | 16 (5.6%) patients |

| Table 3. Residual nodules after initial surgery | | | |
|---|-----------------------|-----------------------|---------|
| Residual nodule | Yes (n=177, 62.3%) | No (n=107%, 37.7%) | P-value |
| Progression | 47 (26.6%) | - | - |
| New nodules | 11 (6.2%) | 11 (10.3%) | |
| 2 nd intervention | 59 (33.9%) | 7 (6.5%) | |
| surgery | 54 (91.5%) | 5 (71.4%) | |
| 5-year OS rate | 96.8% | 90.9% | 0.029 |

| | PSN-1 (n=114) | PSN-2 (n=106) | Solid (n=64) | total |
|------------------------------|------------------|------------------|-----------------|-------|
| Recurrence | 0 | 9 (8.5%) | 11 (17.2%) | 20 |
| Residual nodules | 75 (65.8%) | 67 (63.2%) | 35 (54.7%) | 177 |
| Progression * | 17 (25.3%) | 16 (15.1%) | 14 (21.9%) | 47 |
| New lesion | 4 (3.5%) | 7 (6.6%) | 11 (17.2%) | 22 |
| 2 nd intervention | 21 (35.9%) | 22 (10.8%) | 23 (35.9%) | 66 |
| surgery | 21 (100%) | 19 (86.4%) | 17 (73.9%) | 57 |
| Death | 3 (5.5%) | 5 (4.7%) | 8 (12.5%) | 16 |

* In patients with residual nodules



- The invasiveness of dominant tumor was the most important factor for long-term prognosis in lung cancer with multiple GGNs.
- Progression of residual nodule caused secondary intervention in 1/3 of patients with residual nodules.
- However, progression of residual nodule did not jeopardize the survival.
- So, curative surgery for the dominant nodule is essential and close surveillance and timely intervention for residual GGNs should be carried out in lung cancer patients with multiple GGNs.