

## Lung cancer resection in octogenarian patients

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According to the World Health Organization (WHO), life expectancy at birth reflects the overall mortality level of a population, summarizing the mortality pattern that prevails across all age groups in a given year—children and adolescents, adults and the elderly (1).

Global life expectancy at birth in 2015 was 71.4 years (73.8 years for females and 69.1 years for males), ranging from 60.0 years in the WHO African Region to 76.8 years in the WHO European Region (1).

Women live longer than men all around the world and the gap in life expectancy between the sexes was 4.5 years in 1990 and had remained almost the same by 2015 [4.6] (1).

Dramatic gains in life expectancy have been made globally since 2000, increasing by 5 years between 2000 and 2015, the fastest increase since the 1960s; global life expectancy for children born in 2015 was 71.4 years (73.8 years for females and 69.1 years for males), but an individual forecast depends on where the child is born.

Newborns in 29 high-income countries have an average life expectancy of 80 years or more, while newborns in 22 sub-Saharan African countries have life expectancy of less than 60 years (2).

With an average lifespan of 86.8 years, women in Japan can expect to live the longest (2).

In an analysis by the Surveillance Epidemiology End Results database, approximately half of lung cancer cases are diagnosed in people aged more than 70 years, and approximately 15% of cases are diagnosed in patients aged more than 80 years (3).

Therefore, it is not uncommon anymore for medical oncologists, thoracic surgeons and radiotherapists to confront with octogenarian patients amenable of curative pulmonary resection for lung cancers (4)

Life expectancy in untreated lung cancer patients or patients receiving only palliative care is in the order of 1.5 years (5), while people of 80 years have a life expectancy of 5–9 years in 50% of the cases (6,7). For this reason, nowadays restriction of potentially curative surgery on the basis of age alone is no longer an appropriate option even because elderly patients are more likely to develop toxicity from other treatments (8). We have previously demonstrated that elderly and younger patients did not share all risk factors for respiratory complications and therefore, redefining selective respiratory criteria specifically for elderly patients undergoing pulmonary resections could improve surgical results (7,9). As clearly pointed out by Saji *et al.*, pneumonia was the most common severe complication observed in octogenarian undergoing lung resection (4); similarly, it has been widely demonstrated that respiratory complications are extremely frequent in other highly vulnerable group of patients like obese patients (10), patients previously submitted to chemotherapy (11) and to multiple lung resections (12). However, the surgery-related complications and the post-operative patients clinical conditions can also affect the decision for adjuvant treatments (13).

The nationwide multicenter large-scale prospective observational study (JACS1303) conducted by the Japanese

Association for Chest Surgery (JACS) evaluated details of the clinical factors, comorbidities and comprehensive geriatric assessment (CGA) to develop a comprehensive operative risk scoring (RS) system predicting major morbidity and mortality for octogenarian patients undergoing curative resection for lung cancer (4). It is interesting to observe that operative (30 days) and hospital mortality rates were 1.0% and 1.6% respectively, that is not so different from mortality rate of younger patients (younger than 70); it is important—however—to emphasize that the vast majority of patients received standard lobectomy or lesser resections while pneumonectomy—that is the pulmonary procedure with the highest mortality rate—was almost anecdotal; we can therefore argue that an accurate patient's selection—as well as a standard surgical treatment—contribute to offer to octogenarian patients the best therapeutic options for early stage lung cancer, without exposing them to unacceptable higher risk.

The authors identified as predictive factors for severe complications (grade 3–4) gender, CGA7: memory, simplified comorbidity score (SCS): diabetes mellitus, albumin and vital capacity (VC)%.

Interestingly, the Glasgow prognostic score (GPS)—that is a cumulative score based on C-reactive protein and albumin, reported to have prognostic value in patients with a wide variety of operable (14) and inoperable cancers (15), as well as in patients with cancer undergoing chemotherapy or radiotherapy, or both (16)—did not show any significant prognostic value in this cohort of patients.

We have previously reported that a preoperative GPS class 2 effectively predicts a prolonged intensive care unit (ICU) stay in patients who undergo pneumonectomy for cancer and that postoperative mortality rate in patients with a GPS of 2 was much higher although it was not statistically significant (17). However, this interesting discrepancy may be due to patients selection bias of the studies' populations, being pneumonectomy anecdotal in the first and the standard procedure in the second.

Another interesting aspect—reported by authors among the limits of the study—is that they failed to demonstrate that a specific mode of operation such as limited resection, mediastinal lymph nodal sampling or video-assisted thoracic surgery was significantly associated with decreasing the rate of surgical morbidity and mortality, thus supporting the concept that—when feasible and safe—standard surgical treatment should be offered without any exception in this cohort of patients.

The results of Saji *et al.* are consistent with our previous

experience (9,13) in particular on the concept that—nowadays—surgical and medical treatment should not be denied to aged patients suffering from lung cancer; on the other hand, some different results have been observed—as the predictive value of the GPS score—probably due to the above mentioned different enrollment criteria.

In conclusion, the paper of Saji *et al.* confirm that nowadays restriction of potentially curative surgery on the basis of age alone is no longer an appropriate option and lung resection can be considered among the effective weapons against lung cancer, even in well selected octogenarian patients.

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### Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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