

The New International Staging System for Lung Cancer. Evolution of the System and Concerned Remarks



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The turning point of modern surgery for Lung Cancer treatment can be identified around the beginning of the 80s, when the General Thoracic Surgery already mature to pave the way to the present advances, was initially meeting the novel organisation of surgical minds inspired by the New International Staging System for Lung Cancer.

This was firstly presented by Clifton F. Mountain in 1985, during the IV IASLC World Congress on Lung Cancer in Toronto and then published in 1986⁽¹⁾.

At that time the surgical attitude was still generally inclined to resect radically lung cancers whenever technically possible, according to the diffuse belief that "Resectability is a state of mind" and "the decision whether to resect a particular neoplasm often depends on the respective surgeon's philosophy more than on objective facts"⁽²⁾.

Indeed, the great experience previously acquired on the field of World War II, the ensuing establishment of modern General Thoracic Surgery with the direct filiation of Cardiac and Vascular subspecialties, and the consistent results already obtained on the threshold of the 80s in terms of prolonged survival after lung resection (27-40% 5 yr), as well as the lowered operative mortality (around 10%), would have then really allowed thoracic surgeons to think in such a way^(3, 4, 5, 6).

The new rationale for staging lung cancer by grouping patients in key Stages according to TNM and the end results after surgery, represented a new cultural tool helping the surgeon not only to recognise the disease better, but also to provide a better surgical approach to the disease.

Referring to the Staging System as a mental landmark, Surgeons improved their ability to objectively recognise the local-regional tumoral progression as well as to decide the best surgical approach in the light of the main indication criteria to surgery, now represented by the stage

Abstract

The Rationale of the Staging System of Lung Cancer is discussed from his presentation (Mountain, 1985) to the recent revision and proposals of new classifications. Survival rates offered a strong statistical support to the latest revision in 1997. Stage Group have become 7 out of Stage 0 (Tis). In the New Lymph Node Map, station 4 is confirmed as mediastinal (N2). The improved definition of Stage Grouping requires a golden standard of staging and a world-wide consensus on the surgical approach to mediastinal lymphadenectomy. IASLC, the International Association for the Study of Lung Cancer, is now moving to collect a new largest database with the aim to offer the next expected Revision.

Key words: Lung cancer, staging system, lymph node map.

Riassunto

Viene discusso il razionale del Sistema di Stadiazione del carcinoma del polmone dalla iniziale presentazione di Mountain nel 1985 alle recenti revisioni e proposte di nuovi criteri di classificazione. I tassi di sopravvivenza ricalcolati in base ad una più capillare stadiazione, hanno rappresentato la più importante novità ed il solido supporto statistico dell'ultima revisione presentata nel 1997. Il carcinoma del polmone viene classificato in 7 differenti stadi di malattia, aldilà dello stadio 0 (Tis). Inoltre, nella nuova mappa linfonodale, la stazione 4 viene confermata come sede mediastinica e definita, pertanto, N2. Una così articolata classificazione richiede ovviamente la standardizzazione ottimale delle procedure di stadiazione e, prima su tutte, la necessità di un approccio chirurgico alla linfadenectomia mediastinica che presenti caratteri universalmente omogenei. Tale obiettivo, tuttavia, non è stato ancora raggiunto. La IASLC (International Association for the Study of Lung Cancer), nell'ottica di completare la attesa revisione del sistema di stadiazione, sta attualmente raccogliendo la più ampia messe di dati clinici per ottenere una nuova banca dati che sia possibilmente esente da critiche.

Parole chiave: Carcinoma del polmone, sistema stadiazione, nuova mappa linfonodale.

of disease, the expectation for cure after surgery according to the Stage, and the already known operative factors of risk. The first two basic issues couldn't have existed without the well-organised database of the Staging System! This one, with passing of the years, has become the

universal language for formally presenting the disease and comparing the end results after treatment, as well as the sound method to analytically study the clinical courses after surgery or even, after medical treatment protocols. On the other hand, the involved attention of the single surgeon or group of surgeons in properly staging their own patients, has represented, in the surgical generations following one another, a continued educational challenge, which has basically contributed to create, in the end, an organic body for the modern lung surgical oncology! Therefore, one cannot agree with the position of Griffith Pearson who, still recently, was saying that "there have been no major breakthroughs in surgical management for primary lung cancer during the past 40 years". Indeed, the Rationale for Staging has represented real progress as a true step forward of the mind over the hands!⁽⁷⁾.

Nevertheless, in spite of the large amount of demonstrated advantages, criticism of the Staging rationale and proposals of changes or even of full revisions, have, since the beginning, been pushed forward. This situation which afterwards was still playfully defined by J.R. Jett as "... an attempt at casting aspersions on the merits of some aspect of the Staging System"⁽⁸⁾, became really critical around the year 1996, when, firstly, an official position against the System was taken up during the Conference of Bruges⁽⁹⁾,

secondly an important scientific journal accepted for publication the proposal to change a Stage group based on only a really minute clinical experience⁽¹⁰⁾ and, finally, when severe criticism was openly expressed against it, during the Intl. Workshop on Intrathoracic Staging, London, October 1996⁽¹¹⁾. Those of us, who attended this meeting, had the opportunity to personally feel the heaviness of the atmosphere created there and the difficulty, at times, for a calm debate to develop.

Soon after this last Conference, Mountain started to revise his own database, recognising, at least, that a considerable heterogeneity was existing with respect to the end results for TNM subsets from STAGE I through STAGE IIIA, and that the current utilisation of several Systems for classifying mediastinal lymph nodes, as it relates to the Staging, could have invalidated comparisons in end result reporting. In straight line with this consideration, he decided to operate a substantial revision of both the Staging System, and the mediastinal Lymph Node Classification (Fig. 1). The pertinent papers were published in late summer of 1997^(12, 13). Of course, Mountain seemed not to consider the strong support coming at the same time from the Japanese side, where Naruke and his group were contemporaneously operating a full control of their historical data⁽¹⁴⁾. This check, which ended positively,

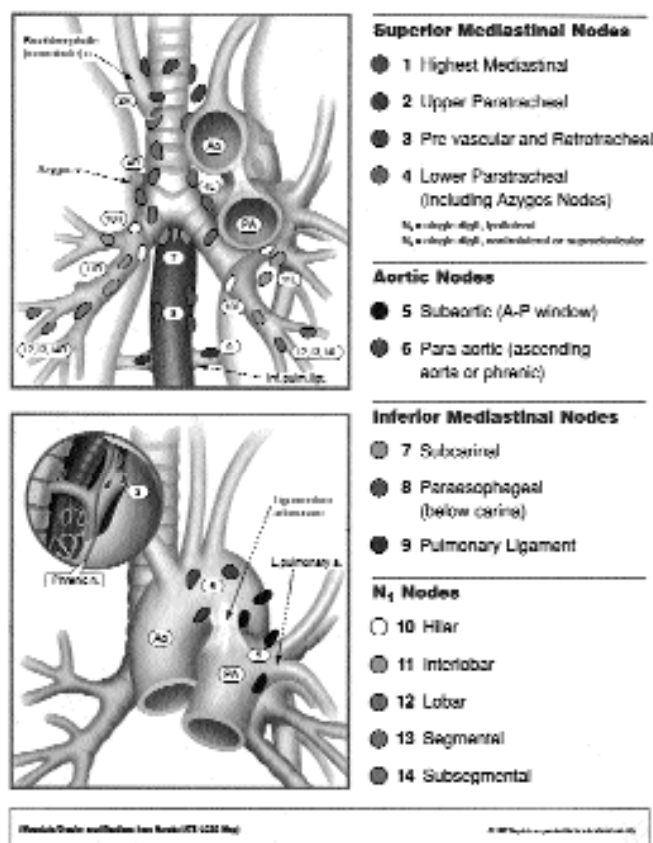


Fig. 1.

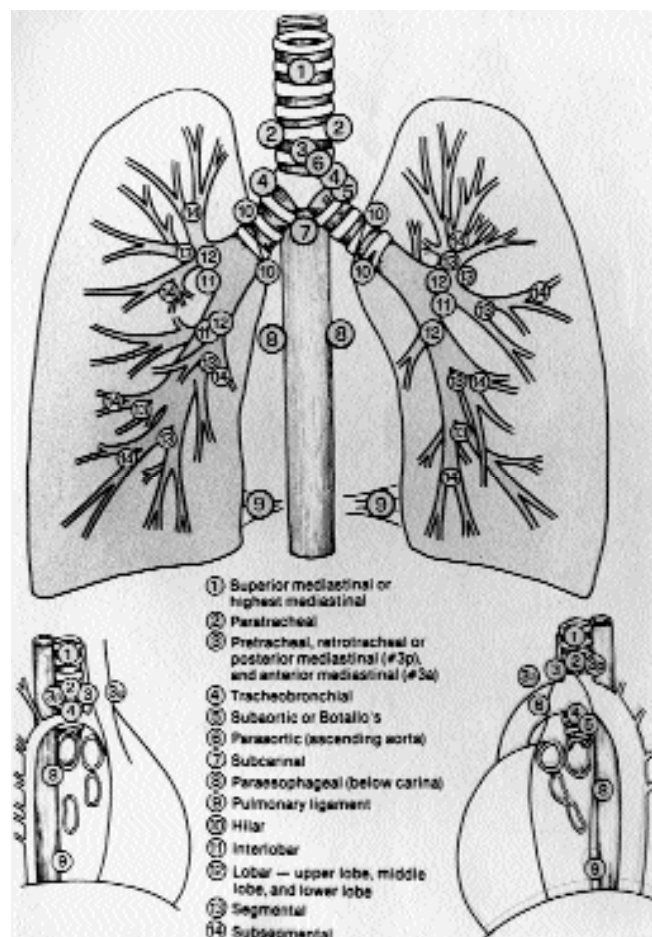


Fig. 2.

substantially confirmed the former setting of Staging System! Unfortunately, Mountain, in spite of such reliable information surely freely accessible for him, went ahead with the Revision all the same!

According to this latest revision, the Stage Groups have now become 7 out of the 0 one (in situ ca.) as: Stage IA = T1N0M0; Stage IB = T2N0M0; Stage IIB = T1N1M0; Stage IIB = T2N1M0 + T3N0M0; and Stage IIIA = T1-3N2M0 + T3N1M0, while Stages IIB and IV remain unchanged.

The subgroup of peripheral T3N0 has been pushed back to the Stage IIB, according to the mutual consistency of survival rates with the subgroup T2N1.

The survival rates have all been recalculated offering better analytical responses, while actually getting, at least for the Stage I, further statistical support from previous well known parent studies^{15, 16}.

The definition of T, N and M has remained the same with one exception: the presence of satellite tumor(s), not lymph nodes, within the primary-tumor lobe of the lung should now be classified as T4, while any intrapulmonary ipsilateral metastasis in a distant, that is, a non primary-tumor lobe of the lung, should be classified as M1.

As for the New Lymph Node Map, Station no. 4 is confirmed as a mediastinal one according to the Naruke Map (Fig. 2), but it is differently named as "Lower Paratracheal nodes". It includes those nodes that lie along the right main bronchus and distal to the cephalic border of the azygos vein. Naruke had previously defined as mediastinal (N2) no. 4 "tracheobronchial nodes", the same nodes which were located "in the obtuse angle level with and beneath the azygos vein". In the ATS publication instead, there was no mention as to whether these nodes, named no.10, were to be considered as N1 or N2, and there was no designation for "hilar" nodes, which was obviously really confusing.

According to Mountain and Naruke, the fundamental idea is that lymph nodes lying within the mediastinal pleural envelope are to be called N2, while those distal to the pleural reflection and lying within the visceral pleura are called N1. As the point of fusion of the two pleural reflections cannot be determined clinically, the definable upper lobe bronchi are used as the most appropriate landmarks for this point.

Furthermore, still following the Mountain's thoughts, there are other features of lymph node involvement which may impact prognosis but which are not given an "N" designation. This includes, the size and number of involved nodes, the levels of involvement, the intracapsular vs. extra capsular lymphatic disease, and the microscopic vs. macroscopic involvement. Only characteristics that can be clinically measurable variables were taken into account, the number of combinations and permutations of TNM would result in a complex system that would be neither remembered nor utilised! Accordingly, Mountain suggests that such information should be recorded in the medical records and be considered in evaluative and therapeutic decision making. In conclusion, the Revised Staging is now working and, so, only a few comments are allowed to be made since it, mainly through the improved definition of Stage

Grouping, appears a bit more reliable and useful as well for classifying the tumor extent and the related end results after cure. Moreover, this revision has been accomplished without going too far away from the former Staging design or, worse still, with destroying it.

Meanwhile, one cannot help thinking that some critical aspects do still exist.

First of all, the improved definition of Stage Grouping basically requires a golden standard in clinically and surgically staging patients. Unfortunately, despite the diagnostic advances presently available, this programme is not easy to reach yet. Regarding this point, it is enough to think that the approach to the mediastinal lymphadenectomy is still different, being basically conceived as a lymph nodes sampling by the West, while it is pursued as a systematic mediastinal dissection by the Japanese groups. As a consequence, the correct identification of N factor as well as the following staging assignment operated by the former, are often critical. The high rate of migration from clinical to pathological Stage, as reported in the Revised Staging, with 25% rate between c and p T1N0M0-STAGE IA, 54% between c and p T2N0M0-STAGE IB and 61% between c and p T1N1M0-STAGE IIA, seems to greatly support this conclusion. Again it is not by chance if the diagnostic recognition is more lacking in Stages IA-B and IIA where the traditional belief of the less aggressiveness of smaller tumors in general and the reduced risk of lymph nodes involvement in particular, has let the majority of western surgeons prefer the lighter but less accurate lymph nodes sampling procedure. Therefore, a world-wide consensus on the best surgical approach to recognise, collect and classify the mediastinal lymphatic network is still expected. Further on, the consistency of STAGE IIA is represented by very low numbers in the last revision, with 29 patients in clinical T1N1M0 and 76 in p T1N1M0 subsets, and therefore a more representative statistical support is clearly needed.

Finally, we cannot conclude such a condensed analysis without mentioning the concerned interest of IASLC on the whole issue of the Staging for Lung Cancer⁽¹⁷⁾, mainly because this System still represents the only one cultural tool for homogeneously handling, at the world level, the clinical matter of Lung Cancer. It is also well known that the Staging System is one of the key clinical issues right fully belonging to IASLC, mainly because it was offered from the beginning and along the following years progressively improved, by the skilled contribution of some well known Members of the Association, among whom we can't but mention the names of Clifton F. Mountain and Tsuguo Naruke. IASLC widely acknowledges the fundamental contribution of these outstanding Colleagues but, in the mean time, it is fully aware that the Staging System is now strongly waiting for some basic answers, which can help to update its reliability as well as to improve its clinical usefulness.

Such timely support has to be, obviously, found by the systematic processing of the enormous amount of new statistical data, which is coming up just as a rewarding yield from the continued educational insight of the Staging Rationale over generations of surgical minds,

world-wide. Accordingly, IASLC has now settled its own Staging Committee, where a group of concerned specialists has to work closely together in the next years, aimed at collecting and critically analysing an initial group of, at least, ten thousand new cases in both fields of NSC and SC Lung Cancer, as the up-dated IASLC database. Therefore, we have to wait some time before such an advanced revision of the Staging System, based upon this new larger database, can be considered ready for the clinical application.

Consequently, any other anticipated proposal of variation in Staging, under the pressure of some cultural tendencies presently active world-wide which do not consider this ongoing statistical work up, would appear unwise and merely mind confusing at a world-wide level.

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