Editorial / Commentary

NEW PROGNOSTIC INDICATORS IN SURGERY

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For more than 50 years, universally used laboratory values enable us to understand and assess the organ function, such as serum creatinine for kidney function, serum aspartate aminotransferase and alanine aminotransferase for liver function, and serum amylase and lipase for pancreas function. Examples can be increased for other organs. However, it is also known that several organs share common laboratory values, therefore differential diagnosis is very important before any interpretation will be done regarding the organ function based on single or multiple laboratory values (e.g., alkaline phosphatase [ALP] is produced by the liver and bones). Moreover, complex disorders, such as cancer, not only impact the involved organ(s) but also the entire metabolism including bone-muscle system as well as nutritional condition of the patient. Recent efforts included a search for new prognostic indicators to understand patient outcomes before any treatment is administered in patients with cancer, so the treatment can be personalized, tailored, or augmented for a better outcome.

In the current issue of International Journal of Surgery, Li et al. [1] studied the impact of albumin-to-ALP ratio (AAPR) as a novel prognostic indicator for patients undergoing minimally invasive lung cancer surgery for non-small-cell lung cancer (NSCLC). The rationale of choosing AAPR to study the outcomes of NSCLC patients includes (i) albumin being a reliable indicator for patient's nutritional condition and reflecting the host systemic inflammatory response, and (ii) ALP being the hydrolase converted in liver, bile duct, and kidneys, which is also being increasingly used as a predictor of mortality for cancer patients with distant metastasis [1,2].

In recent years, AAPR has been used to evaluate patient outcomes/survival in different cancers, such as (i) advanced hepatocellular carcinoma without standard anti-

cancer therapies [2], (ii) cholangiocarcinoma after surgery without pre-operative treatment [3], (iii) limited stage small-cell lung cancer before and after chemo-radiation therapy [4], (iv) non-metastatic nasopharyngeal carcinoma before radical radiotherapy [5], and (v) upper tract urothelial carcinoma (Table 1). In all above-mentioned cancer types, AAPR was found valuable prognostic indicator to assess the patient outcome with or without surgery [1-5]. Furthermore, some studies also included propensity score matched analysis in order to augment the statistical power minimizing confounders and confirming again AAPR as a valuable prognostic indicator [1,5].

Although AAPR could be an attractive prognostic indicator in patients with various cancer types [1-5], attention should be paid to other factors that are universally known impacting the patient survival, such as cancer size, number of positive lymph nodes, patient age, other co-morbidities, etc, as also indicated by above-mentioned studies. Most importantly, considerations should be carefully handled since ALP existed in several isoforms which can originate from the liver and bones. In regard to isoenzymes of ALP, cancer patients could have a significant hazard for bone-related ALP which might challenge the true interpretation of AAPR.

The true value of AAPR as a risk stratification tool in cancer patients should be assessed in prospective, multi-center studies whether the applicability of AAPR is valid in identifying patient survival.

Table 1: The use of albumin-to-alkaline phosphatase ratio in clinical studies.

Year	Disorder / Cancer Type	Reference
2018	Upper tract urothelial carcinoma	#
2018	Advanced hepatocellular carcinoma	2
2019	Non-metastatic nasopharyngeal carcinoma	5
2019	Cholangiocarcinoma	3
2019	Small-cell lung cancer	4
2019	Invasive (non-small cell) lung cancer	1

Legend: (#) P. Tan et al. The prognostic significance of Albumin-to-Alkaline Phosphatase Ratio in upper tract urothelial carcinoma. Sci Rep. 2018;8:12311.

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