IMPACT OF CANCER CACHEXIA ON SURVIVAL DURING CHEMOTHERAPY IN PATIENTS WITH UPPER GASTROINTESTINAL CANCER

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ABSTRACT

Introduction:
When cancer cachexia develops before chemotherapy, adverse events increase and treatment efficacy decreases[1]. However, it is unknown if a similar correlation exists with the development of cachexia during treatment.
Objectives
To clarify the relationship between survival and nutritional deterioration and reduction in weight and/or skeletal muscle during chemotherapy.
Methods
We focused on upper gastrointestinal cancer among deceased patients who had received chemotherapy in our hospital in 2012–2016. All data were obtained retrospectively from electronic medical records. Data regarding blood test results, patient background, and psoas major muscle area obtained from computed tomography images at the time of primary and secondary treatment were used for statistical analyses.
Results
We enrolled 66 cases. The rate of shift to secondary treatment was 39.4%. The group with secondary treatment significantly prolonged survival (P<0.001). The prognostic factors for secondary treatment were serum albumin [Alb] (hazard ratio[HR], 0.32; 95% confidence interval [CI], 0.11–0.90, P=0.03) and body weight change during primary treatment (HR, 0.85; 95% CI, 0.75–0.96, P=0.007). The group with serum Alb level < 3 g/dL or body weight change < −5% had significantly worse outcomes (P<0.001). In addition, a strong correlation was found among body weight, serum Alb value, and psoas major muscle area.
Conclusions
Nutritional deterioration and weight loss during chemotherapy were correlated with poor outcomes. These results suggest a need for active nutritional support during treatment, before occurrence of refractory cachexia.

METHODS

The subjects analyzed in this study were deceased patients who had received chemotherapy in our hospital between 2012 and 2016 for upper gastrointestinal cancer (esophageal, gastric, or duodenal cancer). All data were obtained retrospectively from electronic medical records. The following data from primary and secondary treatment groups were analyzed for the correlation of survival time against each of the following parameters: patient background, blood test results, and cross-sectional computed tomography (CT) findings of the psoas major muscle at the level of the iliac crest, as an indicator of muscle strength[2]. In the blood testing category, we referenced the PiPS-B blood test model that is used for its prognostic predictive capability. This study did not include performance status, which is considered important during the course of treatment owing to the subjectivity of physicians' reports, the inaccuracy of reports from patients, and the difficulty of detecting changes during the treatment period[3].

RESULTS

In total, 66 cases were analyzed (esophageal cancer n = 12; gastric cancer n = 53; and duodenal cancer n = 1). The median age was 69 years (range, 40-86 years), and there were 51 men and 15 women.

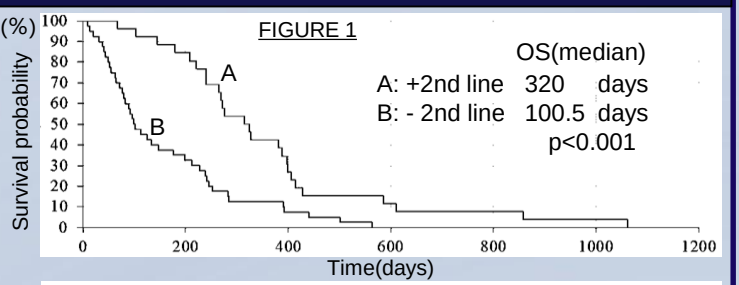
Univariate analysis showed that serum albumin (HR, 0.62; 95% CI, 0.42-0.90, P = 0.014) and C-reactive protein (HR, 1.08; 95% CI, 1.01-1.15, P = 0.019) were the factors associated between survival time and the variables measured at the time of primary treatment.

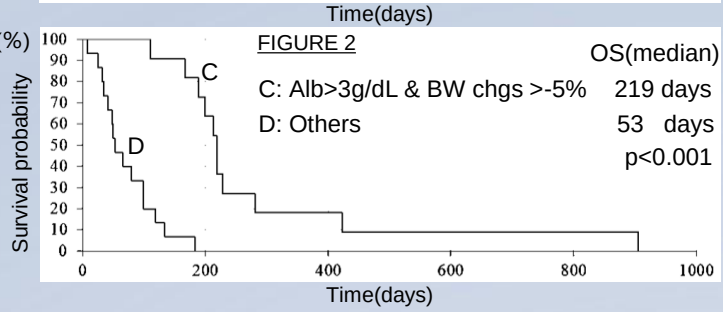
The rate of transition to secondary treatment was 39.4%. Patients receiving secondary treatment showed significantly prolonged survival times after primary treatment compared with patients who did not (P < 0.001)(FIGURE 1).

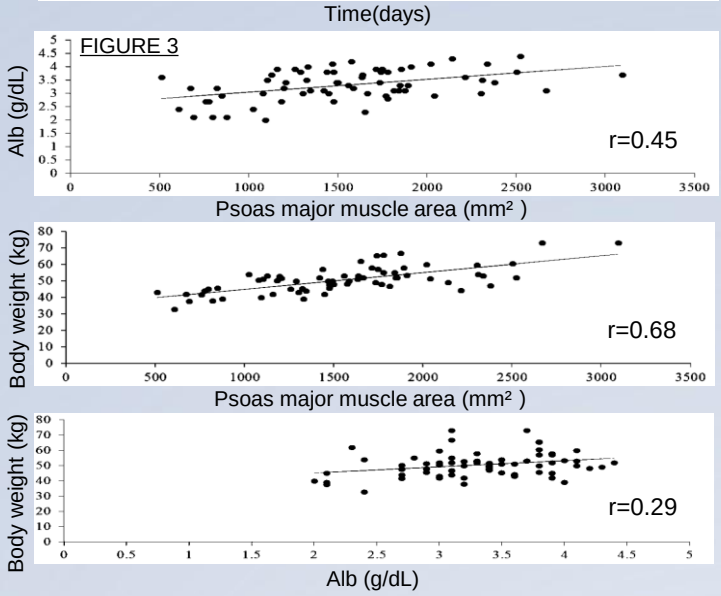
Univariate analysis showed that serum albumin (HR, 0.40; 95% CI, 0.17-0.94, P = 0.034), ALT (HR, 1.02; 95% CI, 1.00-1.04, P = 0.024), ALP (HR, 1.001; 95% CI, 1.000-1.003, P = 0.009), rate of body weight change (HR, 0.86; 95% CI, 0.79-0.94, P = 0.001), rate of psoas major muscle area change (HR, 0.93; 95% CI, 0.87-0.99 P = 0.019), and rate of ALP change (HR, 1.004; 95% CI, 1.001-1.008, P = 0.012) were the factors associated between survival time and the variables measured at the time of secondary treatment. Multivariate analysis showed that serum albumin (HR, 0.32: 95% CI, 0.11-0.90, P = 0.031) and rate of body weight change (HR, 0.84; 95% CI, 0.75-0.96, P = 0.007) were the factors associated between survival time and the variables measured at the time of secondary treatment.

Those patients receiving secondary treatment with serum albumin >3 g/dL and body weight changes post-primary treatment of > -5% were compared to the remainder of the secondary treatment group patients, and the latter patient groups had significantly worse outcomes (P< 0.001)(FIGURE 2).

Known critical factors for true systemic conditions were analyzed for any possible correlations. At the time of primary treatment, a strong correlation was found with serum albumin values, body weight, and psoas major muscle area(FIGURE 3). Correlations were weaker at the time of secondary treatment. In particular, there was no correlation for serum albumin values and body weight.







CONCLUSIONS

Nutritional deterioration and weight loss during chemotherapy were correlated with poor overall outcomes. Cachexia syndrome resulting from cancer progression is known to be difficult to manage and reverse. Changes in the gastrointestinal tract due to upper gastrointestinal cancer, as well as anti-cancer treatments and analgesics can result in decreased food intake. The results of this study have demonstrated the need for monitoring the patient's nutritional status and changes in weight, and once deterioration is observed, proactive nutritional support is necessary before cachexia becomes irreversible. Recognition of the importance of maintaining the patient's nutritional status is needed from both medical staff and the patients themselves.

REFERENCES

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