Antibiotic timing and risk stratification system in the management of community-acquired bacterial meningitis

Community-acquired bacterial meningitis continues to cause significant morbidity and mortality in adults despite advances in antibiotic therapy. Rapid diagnosis and therapy are vital in the management of the disease, but whether the severity of the disease or the timing of treatment with antibiotics influences clinical outcome remains a questionable issue. The authors, therefore, conducted a retrospective, observational cohort study of persons with community-acquired bacterial meningitis to create and test a prognostic model and risk stratification system, and to determine whether delay in the initiation of antibiotic therapy influences clinical outcome.

The subjects of the investigation were 269 persons who, between 1970 and 1995, had community-acquired bacterial meningitis microbiologically proven by a lumbar puncture done within 24 hours of presentation in the emergency department. Patients were divided into derivation and validation samples

For the total group, the hospital mortality rate was 27%. Fifty-six (21%) of the 269 patients developed a neurologic deficit, and in 9%, the neurologic deficit persisted at discharge. Three baseline clinical features (hypotension, altered mental status, and seizures) were independently associated with adverse clinical outcome and were used to create a prognostic model from the derivation sample. The prediction accuracy of the model was determined by using the concordance index (c-index). For both the derivation sample (c-index, 0.73 [95% CI, 0.65 to 0.81]) and the validation sample (c-index, 0.81 [CI, 0.71 to 0.92]), the model predicted adverse clinical outcome significantly better than

chance. For the total group, the model stratified patients into three prognostic stages: low risk for adverse clinical outcome (9%, stage I), intermediate risk (33%, stage II), and high risk (56%, stage III) ($P = .001$). Adverse clinical outcome was more common for patients in whom the prognostic stage advanced from low risk ($P = .008$) or intermediate risk ($P = .003$) at arrival in the emergency department to high risk before administration of antibiotics.

In patients with community-acquired bacterial meningitis, three baseline clinical features of disease severity predicted adverse clinical outcome and stratified patients into three stages of prognostic severity. Initiating treatment with antibiotics before the disease advances to a high level of clinical severity should be the major therapeutic goal for physicians in the management of the disease.

Aronin SI, Peduzzi P, Quagliarello VJ. Community-acquired bacterial meningitis: Risk stratification for adverse clinical outcome and effect of antibiotic timing. *Ann Intern Med* 1998;129:862-869.

Segment-oriented approach to liver resection in the treatment of malignant hepatic neoplasms

The authors report their experience with segment-oriented liver resection in a single-institution series of patients with hepatocellular carcinoma (HCC). They describe the technical features and the results of a prospective evaluation of segmental and sectoral resections in the treatment of malignant hepatic neoplasms.

Segmental resections have a variety of advantages over both classic lobar resections and nonanatomic wedge resections. The segment-oriented procedure conserves functional liver parenchyma and minimizes

the physiologic impact of liver resection. This advantage is particularly beneficial to the cirrhotic patient with impaired hepatocellular function.

Seventy-nine patients with malignant hepatic neoplasms who were treated with a segment-oriented hepatic resection were identified from a prospective clinical database. These patients composed the study group for this investigation. After undergoing segment-oriented liver resection, the patients were followed at regular intervals. Recurrent disease was the end point of the study. Follow-up is reported at a median of 12 months.

During a 5-year period between July 1992 and July 1997, the overall mortality rate of the study group was 2.5%. All postoperative deaths occurred in patients with HCC and cirrhosis. Overall morbidity was 26%. The median hospital stay was 8 days. Mean transfusion requirements were 1.0 ± 0.3 U of packed red blood cells. Patients with HCC showed a greater transfusion requirement than did patients without HCC: 2.7 ± 1.2 U versus 0.6 ± 0.2 U ($P = .05$). Of the patients without HCC, 17% required transfusion. During the 12-month median followup period, the overall disease recurrence rate was 23%. Disease recurred at the hepatic-resection margin in 2.5% of patients.

The findings of the investigation led the authors to the conclusion that segmental resection is a safe technique that allows complete resection of liver tumors with preservation of normal liver parenchyma. Segmental resection is particularly useful for patients with HCC and patients undergoing a repeat of liver resections or bilobar resections. ♦

Billingsley KG, Jarnagin WR, Fong Y, Leslie BH. Segment-oriented hepatic resection in the management of malignant neoplasms of the liver. *J Am Coll Surg* 1998;187:471-481.