Case: The Transplant Candidate with Acute Liver Failure

Setting:
Medical Intensive Care Unit.

Referral:
Consultation from hepatologist Dr. K – "45 y/o male with acute liver failure following acetaminophen overdose. Please evaluate for liver transplant candidacy."

Chart Review:
The patient is a 45-year-old Caucasian-American male who was brought to the emergency department by emergency medical service (EMS) with the chief complaints of lethargy and worsening mental status. Per EMS personnel, patient is a construction worker. His colleagues at work noticed today that he "wasn't like his usual self", then later became confused and disoriented.
Following the patient's evaluation and workup in the emergency department, patient was diagnosed with liver failure. An empty bottle of acetaminophen was found in the patient's coat pocket during a routine inventory check of the patient's belongings, which led to the treatment team's working diagnosis of acute liver failure secondary to acetaminophen overdose. The patient was admitted to the medical intensive care unit, and the hepatology service was consulted. Patient was started on intravenous N-acetylcysteine treatment. However, due to concerns over the patient's eventual need for liver transplantation, the hepatologist requested consultations from transplant surgery, cardiology, and psychiatry.
Upon further review of the patient's medical records, the patient has previously been to the hospital emergency room two times in the past year for back spasms and back pain attributed to his work. While the documentations did not report any other significant medical or psychiatric history, a provider had mentioned in a documentation that the patient may have been diagnosed with alcohol use disorder, and a referral was given to the patient at the time for outpatient counseling.

HPI:
The patient is unable to provide any significant information at the time of this examination due to impairment of attention and cognition.

Labs:
The lab results are notable for leukocytosis of 18.12 K/µL, elevated aminotransferases with alanine transaminase (ALT) of 2679 U/L and aspartate transaminase (AST) of 3103 U/L. Total bilirubin is 2.7 mg/dL, lactate is 11.2 mEq/L, and INR is 3.3. Ammonia is 65 mg/L. Acetaminophen level is 36 µg/ml. Blood alcohol level is <10 mg/dL. Urine drug screen is negative for cannabis, cocaine, opiates, hallucinogens, and other psychoactive substances. CT imaging of the head/neck revealed no intracranial bleeding.

Vital Signs:

Temp: 97.7°F, Pulse: 112, Respiration: 21, Blood Pressure: 109/57, SaO_2: 96% on room air

Exam:
The patient is lying in bed, accompanied by his wife and other family members at bedside. He is lethargic and somnolent, though he is somewhat responsive to repeated verbal awakenings and commands. Patient's speech is soft and slightly slurred, though his language appears intact. His thought process is disorganized. Patient does not exhibit any apparent perceptual disturbance. He is cognitively impaired at this time – though he is oriented to self and appears to understand he is in a hospital, he is neither oriented to date/time, nor is he aware of his current situation. Overall, patient is a limited historian at this time.

INTEGRATION OF ASSESSMENT AND MILESTONES

1. What other information would you like to clarify/obtain from the medical teams?

Milestones.
MK2. Psychopathology
SBP2. System navigation for patient-centered care
ICS2. Interprofessional and team communication

2. What are the key elements of a pre-transplant psychiatric evaluation?

Milestones.
PC1. Psychiatric evaluation
MK2. Psychopathology
SBP2. System navigation for patient-centered care
PBLI1. Evidence-based and informed practice

3. What information would you like to clarify/obtain from the patient's family?

Milestones.
PC1. Psychiatric evaluation
MK1. Development through the life cycle
MK2. Psychopathology
P1. Professional behavior and ethical principles
ICS1. Patient- and family-centered communication

Collateral Information:
The patient's family members are more than willing to provide the aforementioned information, as they appear very invested in the patient's treatment. Regarding the acetaminophen overdose, they don't believe it was intentional; the patient has recently been complaining of worsening back pain related to his work. His wife has noticed that he may take 4-5 pills at a time in the last few days. They note that the patient has

appeared more upset and withdrawn lately. He has stopped playing for his local recreational softball team. He often goes to the bar after work for a few beers before returning home, and may have a glass of whiskey before bedtime. After the last emergency room visit, patient did follow through with the referral and attend counseling for a few months. Most recently, the patient's wife recalls a couple of instances when the patient made comments like "man I wish I can just go to sleep and not wake up" and "I can't keep living like this". Patient has no other psychiatric history or history of self-harm. Patient lives at home with his wife and two young children; the family has no other questions or concerns at this time and would like the treatment team to "do everything you can to help him".

4. On day 2 of the patient's admission, the ICU resident notifies you that the patient has experienced improvement in his mentation and would likely be able to converse with you at this time. Aside from the items in the pre-transplant psychiatric evaluation mentioned earlier, what other information would you like to clarify/obtain from the patient in this encounter?

Milestones.
PC2. Psychiatric formulation and differential diagnosis
MK2. Psychopathology
PBLI1. Evidence-based and informed practice
ICS1. Patient- and family-centered communication

Interval History:
Overall, your assessment did not show any evidence of significant psychiatric disorder or concerns. The patient's recent history did not reveal significant alcohol use. You present your evaluations and findings to the consulting hepatologist, Dr. K, as well as the rest of the multidisciplinary transplant committee, much to their appreciation. In consideration of the patient's declining liver function, the committee has made the decision to proceed with listing and the patient is listed status 1 for liver transplantation. On day 4 of his admission, the patient undergoes a successful orthotopic liver transplantation.

5. On post-operative day 3, the ICU resident sends you a message asking you to come by the patient's room. On reviewing the most recent progress notes, the patient's mental status has appeared worsened since the operation. The family is concerned that the patient has continued to be disoriented and confused, as they have expected that he would be "talking and walking around by now". In general, what are some of the most common causes of neurocognitive dysfunction in the early post-surgical period after liver transplantation?

Milestones.
MK2. Psychopathology
MK3. Clinical neuroscience

6. By post-operative day 10, patient has made a near-complete/full recovery. His primary treatment team is satisfied with his progress and the patient is scheduled to be discharged home. You have been asked to follow up with the patient prior to his discharge. What would be some of your recommendations/treatment considerations at this time?

Milestones.
PC3. Treatment planning and management
PC5. Somatic therapies
SBP2. System navigation for patient-centered care
ICS3. Communication within health care systems

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