Family Practice Grand Rounds

Alcoholism and Diabetes

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DR. HAROLD MOESSNER (*Assistant Professor of Family Practice*): Today's Family Practice Grand Rounds will concern a middle-aged housewife and mother who presents with a large number of problems. Mr. Al Sellers, a senior medical student at the University of Iowa College of Medicine, will present the initial history, physical examination, and laboratory data.

MR. AL SELLERS (*senior medical student*): The patient is a 38-year-old married, white woman with three children. She presented in the Family Practice Office on March 20, 1975, with a history of episodes of "gallbladder trouble" of about one year's duration. Each of the episodes (there were approximately five in the last year) consisted of a "tearing pain" in the right upper quadrant of the abdomen, which was severe enough to require the patient to rest. The pain would persist for about three days. There was some nausea, but no vomiting and no difficulty with her bowels. There was no fever or jaundice accompanying any of these attacks. Certain foods, such as fatty food, fresh vegetables, and other "acid or spicy" foods tended to precipitate attacks; but skim milk frequently relieved her discomfort.

The past history revealed the following problems: (1) duodenal ulcer, ten years ago, (2) kidney infection, five years ago, (3) hysterectomy, seven years ago, (4) tonsillectomy, at age five, (5) nervousnes, for 15 years, (6) high blood pressure, for 15 years, (7) uremic poisoning, during a pregnancy 15 years ago, (8) sinusitis, pleurisy, and pneumonia, ten years ago, (9) hypothyroidism, and (10) concussion, requiring hospitalization for 36 hours, ten years ago.

The patient has taken many medications consisting of: (1) Anaspaz, (2) Tranxene, (3) Aldoril, (4) thyroid, (5) Darvon-N, (6) Mylanta, (7) Actifed, (8) vitamin and hormone injections, and (9) numerous non-prescription drugs.

From the social and family history we learned that the patient's husband is 41 years old and that they have been married for 20 years. The husband is a truck driver and is therefore frequently absent from the home. The three children are 18, 15, and 13 years old and all are in good health. There was a history of one stillbirth. The 15-year-old has a history of an appendectomy, abdominal adhesions, and infectious mononucleosis. The patient's mother has a history of elevated blood pressure, but there was no family history of cholecystitis, diabetes, heart disease, cancer, or other serious illness.

The personal history revealed that the patient has smoked two packs of cigarettes daily for the past 25 years. In addition, she admitted to consuming two pints of vodka daily for the past five years and drinking heavily before that time.

The review of systems showed that the patient had lost weight, dropping from 155 to 118 lbs in the course of the previous three months. Bilateral, infected, ingrown toenails of her big toes had bothered her off and on for some time.

At physical examination the patient's blood pressure was 120/94. She had multiple bruises of her legs and back; her liver edge was five centimeters below the right costal margin at the mid-clavicular line, and there were infected, ingrown toenails of both

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great toes.

DR. REUBEN B. WIDMER (*Associate Professor of Family Practice*): I didn't hear anywhere in the history that this woman had any polyuria or polydipsia.

MR. SELLERS: She denied polyuria and polydipsia.

DR. LARRY LAWHORNE (*Family Practice Resident*): Needless to say, this patient has a large number of problems and it is difficult to decide which to tackle first. Obviously, we cannot see her once a week in the Family Practice Office, so I would admit her to the hospital for a complete work-up. She certainly describes the symptoms of gallbladder disease with the right upper quadrant pain and her intolerance to vegetables, fatty foods, spicy foods, etc. I think we are all aware that the possibility of alcoholic liver disease must be considered in view of her symptoms and her history of excessive alcohol consumption. Also, we must remember that severe liver disease will produce a non-functioning gallbladder on x-ray studies. There does not seem to be any evidence of severe chronic liver disease since there were no spiders, palmar erythema, or any of the other stigmata. It would be interesting to know how her duodenal ulcer disease was documented. Did she have definite evidence of a duodenal ulcer, or were her symptoms due to bouts of alcoholic gastritis?

MR. SELLERS: She was hospitalized ten years ago for approximately seven days, but we have not obtained reports of her x-ray studies at that time.

DR. LAWHORNE: So that will be one thing we will have to document during her hospitalization. The many other problems mentioned in the history, plus her use of a multitude of medications makes one wonder if this patient may have been abusing alcohol more severely than she is willing to admit. Certainly the possibility of her being a diabetic must be investigated. Other possible diagnoses are recurrent attacks of pancreatitis, neoplasms – especially a hepatoma – chronic active hepatitis, and a megaloblastic anemia.

I would admit this patient to the hospital, get the routine laboratory studies (CBC, urinalysis, SMA 12-60), chest x-ray, UGI series, and cholecystogram. A urine amylase would be appropriate to rule out pancreatitis, and an Australian antigen is indicated. Of course, when she is admitted to the hospital, you have to be concerned about her withdrawal from alcohol. Also, you must remember that she has not been eating very well, and as you start feeding her you need to supplement her diet with thiamine and other B-complex vitamins. Since she has been smoking two packs a day, the patient will also need some sedation for her cigarette withdrawal. This can be provided by fairly large doses of diazepam. In addition to her complete work-up, she will need much reassurance and the proper psychological support during this anxious period.

MR. SELLERS: The patient was hospitalized from March 21, until April 3, 1975. Lab work on admission revealed a hematocrit reading of 49 %, hemoglobin level of 16.1 gm %, red blood cell count of 4.7 million/cu mm, white blood cell count of 11,000/cu mm with a normal differential and a sedimentation rate of 7. The mean corpuscular volume was 103 cuμ, and the peripheral smear revealed a few target cells and some anisocytosis. Urinalysis showed 3+ glucose, a large amount of ketones, 3 to 5 WBCs, and 2 to 3 RBCs per high-powered field. The SMA 12-60 was significant in that the glucose level was 406 mg %, alkaline phosphatase was 194 units, total bilirubin was 2.3 mg %, and SGOT was 97 units. Thyroid function tests were reported as T_4 of 7.9, T_3 of 26.5, T_7 of 2.09 and TSH of 4 nanograms. EKG was normal. Pap smear and P.P.D. were negative. X-rays of her chest, stomach, gallbladder, and kidneys were entirely normal. Cystoscopy revealed a mild trigonitis.

DR. MOESSNER: To summarize the patient's hospital admission, let me repeat that her x-ray studies were entirely normal, so that the possibility of gallbladder disease or ulcer disease was ruled out. The serum and urine amylases were normal, which ruled out pancreatitis. The normal BUN, small number of WBCs and RBCs in her urinalysis, and the normal IVP and cystoscopy ruled out serious urinary tract disease. The thyroid function tests were normal, as were her blood pressure readings in the hospital. Therefore, we end up with a patient who has diabetes mellitus and alcoholism as her basic diagnoses.

DR. DENNIS HELLING (*Clinical Pharmacist*): First I would like to comment about some of the patient's past medications. For her hypertension, the patient had been taking methyldopa 250 mg and hydrochlorothiazide 15 mg daily. This is really a homeopathic dose of both medications and because of her alcoholic history, I would question her compliance. In addition, the patient admitted the use of antacids, and one has to be concerned about the amount of sodium present in the various antacid preparations. In relation to her diabetes, one should be aware of the possibility of drugs causing a false positive elevation of the urinary glucose. Methyldopa and thiazides have both been shown to produce this distortion on occasion. In planning the management of her diabetes, one has to be aware of the fact that chronic alcoholics frequently have lower blood levels of oral hypoglycemic agents due to poor absorption or more rapid metabolism of the drug.[1] If disulfiram is used in the treatment of the alcoholism, the possibility of this drug interacting with the oral hypoglycemic agents must also be considered. Certainly, insulin would be a more desirable drug for the treatment of this patient's diabetes.

JOETTA REDLIN (*Nutritionist*): This patient was initially overweight, so that when she lost the 37 pounds, she brought her weight into the normal range. Therefore, it is important that she not gain much weight. I would recommend a diet of 1,500 calories at the beginning and adjust it from there depending on her weight and activity. Since she will be receiving insulin, it will be important to distribute the carbohydrates equally and add adequate protein and fat for the remaining calories. Also, it is very important that the patient be given some type of vitamin supplement so that she has an opportunity to rebuild her body stores. The patient must understand the importance of following her diet and how this will contribute to the total therapy of her diabetes.

DR. REMI J. CADORET (*Professor of Psychiatry*): I would like to ask for some further information regarding this patient's nervousness, because it may be related to her alcoholism.

MR. SELLERS: The patient described herself as a very nervous person and as someone who is easily upset about little things. She was worried about her visit to the Family Practice Office and the possibility of

her admission to the hospital for gallbladder surgery. In addition, she has a history of problems in her family as well as her own many health problems.

DR. CADORET: I feel it is important to obtain a thorough past psychiatric history on such a patient. This is done in order to determine if she may have some underlying psychiatric condition, such as depression, anxiety, or neurosis which are commonly associated with alcoholism. As you know, many women who suffer from depressive illness often become alcoholic. The detection and proper management of any underlying psychiatric condition would certainly be beneficial in the management of her alcohol dependency. The other issue to consider is how to treat her alcoholism. An important aspect of her initial hospital stay will be her withdrawal from the alcohol. Following withdrawal, the plans for long-term treatment of alcohol dependency must be developed. She will certainly require a great deal of counseling, both in a group setting and on a one-to-one basis. In addition, referral to Alcoholics Anonymous is essential. I feel that such a patient may worry a great deal and become nervous and upset about her physical condition. Therefore, her family physician should expect her to be a rather difficult management problem. She has two chronic, long-term medical problems which are difficult to treat even when they occur separately. If she reacts in a manner consistent with her past history, her physician should not be surprised if she again resorts to alcohol or other sedatives to control her nervousness. I would therefore recommend very close supervision for this patient, and a great deal of support in dealing with the many tensions that will arise from her two major diseases.

DR. MOESSNER: A lengthy psychiatric history failed to reveal any evidence of a neurosis or psychosis in this patient. In fact, she accepted her diagnoses very well. She realized the severity of these two problems and dealt with them in a realistic fashion. During her hospital stay she interacted in a positive manner with the other patients and the nursing staff. Her family was very supportive and contributed a great deal to the patient's positive attitude.

The diagnosis of her alcoholism, of course, was obvious after the history of consuming two pints of vodka per day was established. It is interesting to note that vodka seems to be a favorite drink of the female alcoholic. The history of many and various illnesses and medications is certainly indicative of alcoholism and frequently contributes to the "fat chart syndrome" which should alert the physician to the possibility of alcohol dependency.[2] The physical findings of an enlarged liver and multiple bruises are also common in alcoholic patients. The laboratory results of macrocytosis, target cells, and anisocytosis are produced by alcohol's interference with the absorption of folic acid from the small intestine and the depressant effect of alcohol on the bone marrow.[3] The elevated liver function tests are indicative of alcoholic liver disease.[4]

The patient's alcohol withdrawal in the hospital was controlled with oral diazepam without any difficulty. She was started on an 1,800 calorie diabetic diet because most alcoholic patients tend to be extremely hungry, and adequate nutrition is certainly an important part of the therapy of their many medical complications. In addition, she was placed on a vitamin supplement and received a great deal of counseling about her alcohol dependency. She was introduced to Alcoholics Anonymous, and the entire staff was amazed at the patient's eager involvement in all aspects of her therapy.

The history of her weight loss, the glucosuria, the ketonuria, and the elevated serum glucose established her diagnosis of diabetes mellitus. On admission to the hospital, electrolytes revealed that her serum potassium was low. This was corrected by oral doses of KCl. Regular insulin was started on admission and was converted to NPH insulin on the third hospital day. The diabetes was controlled on 30 units of NPH insulin and she was discharged on that dose. The dietician instructed the patient in the 1,800 calorie diabetic diet, and her infected ingrown toenails were treated. Her bruises cleared and her general appearance improved tremendously during her hospital stay. Also, the liver function tests returned to normal range before her discharge.

Of course, diabetes and alcoholism are serious chronic illnesses, but when both are present in the same patient the problems are magnified. Both diseases require a stable and confident patient, a concerned and caring physician, and an ongoing physician-patient relationship. The patient must not only take the prescribed medications but also follow a strict diet, abstain from alcohol, and establish a more structured life-style. The physician must not only see the patient on a continuing basis, but also be available when emergencies arise. He must be prepared to adjust the diet and medications as the disease processes change, and understand that the patient will stray from the instructions about the diabetic diet and abstinence from alcohol. *For to err is human!*

The diabetic patient who does consume alcohol must realize that it adds calories to the diet. For example, a drink containing 1½ ounces of whiskey, soda or water, and ice adds 125 calories, and beer contributes 15 calories per ounce. It the diabetic-alcoholic drinks heavily and does not eat, he or she is more susceptible to acute hypoglycemia during withdrawal because of the depleted glycogen stores in the liver. If the patient is taking phenformin hydrochloride, he or she is more likely to develop lactic acidosis while consuming alcohol. A small number of diabetic patients who are being treated with sulfonylurea oral hypoglycemic agents develop an adverse drug reaction similar to the disulfiram-alcohol reaction. Also, chronic alcohol consumption leads to the induction of the drug metabolizing enzymes within the liver which may result in a decreased half-life of such drugs as tolbutamide, barbiturates, warfarin, and diphenylhydantoin.[5]

I am happy to state that our patient has had none of the above problems. Since her discharge from the hospital, she has followed her diet, taken her insulin, abstained from alcohol, and is doing well despite two serious, chronic diseases.

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