Booklet D

Pretest Correct Answers

Please discuss the answers to each question with the members of your group. Be sure that no one has any questions about them. If any one does, try to explain the rationale for the right answer. In explaining something to another person, most people gain a better understanding of it and often transmit a better understanding. *The pretest discussion and patient-oriented problem-solving parts of this activity are "open book."* Be sure to refer to textbooks, notes, and other written resources whenever questions arise.

3. As a general rule, antibody is important in protection against extracellular organisms. Cellular immunity is more important for protection against intracellular organisms, since antibody cannot penetrate living cells. A T-cell deficiency will therefore predispose the patient to intracellular bacterial, viral, and fungal infections. Therefore, the correct answer is C.

8. Complement consists of a group of serum factors capable of reacting with antibody-antigen complexes when the antibody is IgM, IgG1, IgG2, or IgG3, regardless of the antigenic specificity of that antibody *(nonspecific enhancement).* Once a humoral immune response produces antibody to a specific antigen *(specific immunity),* the complement system is often capable of nonspecifically enhancing that immunity by amplifying the reaction through various enzymatic reactions that lead to lysis of cells, increased phagocytosis, opsonization, and other effects. D is therefore the correct answer.

10. The complement fixation test on serum Y is inconclusive as to the presence of Ab to homologous Ag. Since indicator RBCs were not lysed when the antigen alone was exposed to the complement (tube 6), the antigen itself fixed complement without Ab present (ie, the antigen is anticomplementary). It is therefore impossible to tell whether antibody plus Ag also fixes complement. C is therefore correct.

After discussing all the pretest answers, please instruct your group to proceed to the "Introduction to the Clinical Problem."

Introduction to the Clinical Problem

The goal of this exercise is twofold. One is to help you learn how to apply your basic knowledge of immunology to clinical problems. The other is to help you learn how to work with other people (ie, how to learn from them and solve problems together). Good health professionals must first be able to learn from their patients and then be able to teach them. With this in mind, the data necessary for the solution of the patient-oriented immunological problem have been divided into four parts so that everyone in your group must share data to arrive at a diagnosis.

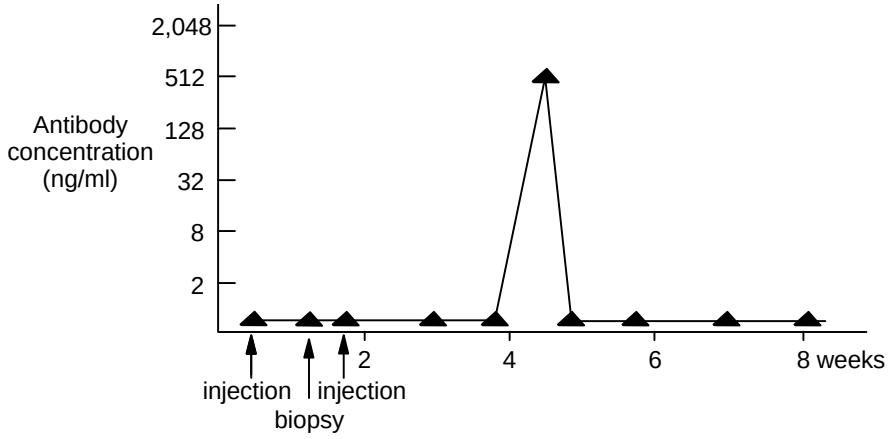
Please do your best to teach each other; seek additional information from your textbooks and share it with each other and, as a group, arrive at the correct diagnosis in a logical way At the end of the exercise, everyone in the group should agree on the diagnosis and be able to identify the data that were (1) consistent with the diagnosis, (2) irrelevant to making the correct diagnosis, or (3) inconsistent with the diagnosis. You also should understand the principles behind each observation and laboratory assay. At the end of this problem, you will look at the correct answers to the problem and compare them with the answers you and your group wrote.

Begin the problem by presenting the patient's history on the following page to your colleagues.

Data sheet D

Other tests

The patient received the old *Haemophilus influenzae* polysaccharide vaccine subcutaneously in the left anterior thigh. Serum drawn subsequently was tested for antibody to PRP and the results were plotted in the graph shown below (PRP, or polyribophosphate is the capsular polysaccharide of *Haemophilus influenzae* type b, against which protective immunity is directed). A small left inguinal lymph node was biopsied 10 days after the vaccine administration.



Peripheral blood lymphocyte subpopulations:

	Patient	Normal range
(A) Number of CD3+ lymphocytes (total T lymphocytes)	2280/µL	700-2500/µL
(B) Number of CD4+ lymphocytes (helper T lymphocytes)	1254/µL	430-600/µL
(C) Number of CD8+ lymphocytes (cytotoxic/suppressor T cells)	798/µL	280-1100/µL
(D) Number of CD19+ lymphocytes (total B lymphocytes)	12/µL	96-241/µL

When your group has completed its discussion, remove the Group Question Sheet (in Booklet "A") and fill it out together. Then compare your group's answers with the correct answers (in Booklet "B").