



RESEARCH OF THE CROSS CURRICULAR RELATIONS OF CHEMISTRY AND INTERNAL DISEASES IN MEDICAL EDUCATION

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ABSTRACT

Chemistry is one of the fundamental disciplines of human knowledge. At the same time, internal medicine is the central and largest area of medicine.

PURPOSE: This article will look and prove the relations of chemistry and internal medicine.

METHODS: According to Mileva and Geshev (1) "Internal Medicine bordered with a priori disciplines epidemiology, social medicine, and basic medical sciences - anatomy, pathophysiology, pharmacology, surgery and others." In many articles we have proven links that exist between chemistry and anatomy (2) chemistry and pharmacology (3). This article will look and prove the relations of chemistry and internal medicine.

RESULTS: Extensive knowledge of students in chemistry are necessary and important prerequisite for understanding the methods used for diagnostic interpretation of the results, placing the correct diagnosis and to assess results of therapy.

CONCLUSION: The investigation can be concluded that the link "Medical Chemistry" - "Internal medicine" exists. Sometimes it is indirect, but often this connection is direct and easily found.

Key words: Medical Chemistry, Internal Medicine, Medical Education

INTRODUCTION

Chemistry is one of the fundamental disciplines of human knowledge. At the same time, internal medicine is the central and largest area of medicine. This article will look and prove the relations of chemistry and internal medicine. According to Mileva and Geshev (1) "Internal Medicine bordered with a priori disciplines epidemiology, social medicine, and basic medical sciences - anatomy, pathophysiology, pharmacology, surgery and others." In many articles we have proven links that exist between chemistry and anatomy (2) chemistry and pharmacology (3).

PURPOSE AND OBJECTIVES

This article will look and prove the relations of chemistry and internal medicine.

MATERIAL AND METHODS

The focus was on people's actions and accounts in an everyday context and the aim was to look for meaning patterns, similarities and differences in how clinical teaching is carried out. Non-participant observations and informal interviews were used as general data collection methods. According to the ethnographic approach, the analysis of data involves interpretation of meanings, functions, and consequences of human actions and instructional practice, and how these are implicated in local, and perhaps also wider, contexts. Consequently, in this study we used a qualitative design, with data collected from observations from clinical teaching situations and informal interviews with clinical teachers and medical students.

The data collection setting was a surgical ward and ward of internal diseases at a teaching hospital in Medical Faculty - Stara Zagora, Bulgaria. Access to wards, clinical teachers and students was made possible by the Director of Studies at the Medical school and

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the department heads at the hospital. In order to minimize the effect of the researchers they were adapted to the clinical environment by wearing a white coat with no nameplate which gave them access to the health care environment while at the same time showing they were not to be seen as health care personnel dealing with patients. In this way the researchers could participate without being a distraction or being directly involved.

The observations were guided by the aim of the study, during which the researchers took notes. Informal interviews were, for example, conducted in the coffee rooms or in the corridor. These informal interviews were mainly carried out in order to add further information to the observations and in order to establish a foundation for a deeper understanding of what had been observed. Observational notes and notes from informal interviews were transcribed after each observation.

RESULTS AND DISCUSSION

Violations of water-electrolyte and acid-base balance and affect their treatment concepts and ideas that medical students are studying in medical chemistry, biochemistry and physiology.

Explanation of acid-basic properties of the substances undergoing historical development, and today the major theories of acids and bases are classical theory of electrolytic dissociation (TED) of Arrhenius, protolytic theory Bryonsted - Lowry and Lewis electronic theory.

The first evidence of acids and bases have been more students in seventh and eighth grade: are familiar with the properties of a mineral acid (hydrochloric, sulfuric) and alkalis (bases). In secondary schools their knowledge is deepened by studying new inorganic (phosphoric, chlorine, etc.) and organic acids (carboxylic, phenolic, etc.). Expanding the knowledge and fundamentals of the substances are considered primarily from the standpoint of the TED (Arrhenius) and students receive initial knowledge of the protolytic theory. In the course "Medical Chemistry" this knowledge significantly broaden and deepen and acquire medical direction. The main acidic - basic theories of Lewis and Bryonsted -Lowry, coligative properties of solutions, hydrolysis processes, etc. (5, 6). The laboratory classes are taught pH and methods for its

determination (colorimetric and electrometric), preparation and importance of the buffer systems (Henderson - Haselbah), etc (7). The knowledge and skills are widely used in biochemistry course in the study of pH influence on the enzymatic activity, the role of hemoglobin in gas transport and buffer system of blood, in studying the mechanisms involved in maintaining acid-base balance of body, etc (9). In the course of physiology students are introduced to the water distribution in different tissue, cellular and intercellular spaces in the human body. Viewing the water as a solvent of different electrolytes, glucose, adenizintriphosphatase, proteins, and medium for chemical reactions. Attention is drawn to the students that in quantitative terms electrolytes contribute more to osmolality of body fluids than higher molecular weight proteins. In the course of lectures and practical classes students are introduced to the differences in concentration of major ions in the extracellular and intracellular fluid. A detailed is reviewed the physiological importance and dynamics of sodium, potassium, calcium, chlorine and magnesium ions. At this section of physiology they acquire general idea of the overall water-electrolyte balance in the body, using their knowledge of chemistry, biochemistry and previous studied sections of physiology (4, 10).

In the course of "Clinical laboratory received to date knowledge find their practical application in diagnostic activity. The main studies with which students are introduced to the analysis of actual blood pH, actual rCO₂ of whole blood, actual bicarbonate concentration in blood plasma standard bicarbonate in blood plasma, an excess of bases (BE), etc. discussed the occurrence of acidosis and alkalosis in humans.

Dealed are the metabolic and respiratory mechanisms for its occurrence, the body's ability to compensate for these conditions and methods of therapeutic effects. Studied are the changes in the concentrations of several electrolytes during acidosis and alkalosis: sodium, potassium, chloride, bicarbonate, etc. (8).

Based on that knowledge to the students of "internal medicine" are offered practical guidance and solutions such as: etiology, pathogenesis, clinical diagnostic, laboratory diagnostic and treatment in violation process

fluid and electrolyte and acid-base balance of the body. Follow the metabolism of sodium, water, potassium, calcium, magnesium, distortions in the acid-base status (1).

In the course of "Medical Chemistry" in "Biopolymers" Students learn the structure and properties of amino acids, proteins and nucleic acids (5, 6). This knowledge is indispensable for the perception and understanding of the studied biochemistry in structure, function and metabolism of proteins in the body: the dynamic state of proteins and amino acids, the movement of amino acids in the body, degradation of the carbon skeleton and their biosynthesis of amino acids replaceable for the man, turning of amino acids in biologically important N-containing compounds. This knowledge of chemistry required in clinical laboratory to determine the concentration of several metabolites such as urea, uric acid, cholesterol, triglycerides, glucose and others.

Theoretical formulations studied in chemistry, found practical application in the clinical laboratory are base for the physician internist in the treatment of some internal diseases of the liver in the diagnosis of cardiovascular system, diseases of the kidneys and urinary tract, etc.

In their practical classes in chemistry medical students study chemical composition and chemical analysis of gallstones. This analysis is an activity of the clinical laboratory (7). Internal Medicine is studying diseases caused by their formation: kidney stones and Gallstone disease (1).

Most direct, however, is the relationship between the two disciplines in the so-called. "Chemical disease" - silicosis, arrgiriya and various intoxications with inorganic acids and alkalis, some organic acids, nitrogen compounds, chlorine and its compounds, copper compounds, and lead compounds, carbon monoxide, ethyl alcohol, methyl alcohol, pesticides, and poisoning by various drugs. And while chemistry indicates the source of the poisoning, chemical composition and the poison composition Internal Medicine offer appropriate treatment (1, 5, 6).

The present study can be concluded that the link "Medical Chemistry", - "internal medicine" exists. Sometimes it is indirect through other major medical disciplines, such as "physiology", "Clinical Laboratory", "anatomy" and others, But often this

connection is direct and easily found. But in both cases, extensive knowledge of students in chemistry are necessary and important prerequisite for understanding the methods used for diagnostic interpretation of the results, placing the correct diagnosis and to assess results of therapy.

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