The last 30 to 40 years have witnessed the emergence of double process theory (DPT) in cognitive psychology which divides human thinking into System 1 and System 2 (1). System 1 refers to thinking that is fast, intuitive, effortless but error prone while System 2 refers to thinking that is slow, deliberate, effortful and accurate. It is claimed that both systems coexist in the human mind.

In recent years, DPT has been applied to the process of diagnosis with the goal of reducing diagnostic errors (2). In this application, the fast System 1 thinking is believed to be the source of most diagnostic errors which can be avoided, it has been suggested, by slow System 2 thinking (3).

In this paper, we shall evaluate the relevance of DPT in reducing diagnostic errors by first examining the method currently employed for diagnosis in practice.

In this method, as we clearly see in published clinicopathologic conferences (CPCs) and clinical problem solving exercises, several diseases are suspected from a presentation and formulated as diagnostic hypotheses to create a comprehensive differential diagnosis (4).

Each disease in differential diagnosis is then verified by tests to see if it is correct or not and the disease with the strongest evidence in form of an observed key test result is diagnosed definitively (4).

During diagnosis in practice, suspecting and testing go hand in hand for a disease to be diagnosed definitively. In the absence of testing, a suspected disease remains a diagnostic hypothesis only.

This method of hypothesis generation and verification for diagnosis in practice is identical, as we have pointed out (5), to the scientific method which has been known to be the most reliable method for gaining accurate knowledge in any investigation for the last 400 years (6).

The diagnostic accuracy of the current method of diagnosis is 98 percent in CPCs (7) and 85 to 90 percent in daily practice (8).

We note that DPT has been developed primarily from observations and experiments about reasoning in daily life (1). This reasoning is not usually
scientific as a judgment or inference reached by it is not verified as being correct by tests of some sort.

It is easy to see that judgments or inferences made rapidly by System 1 thinking in daily life may frequently be incorrect as they are made hastily without verification of their correctness.

In diagnosis in practice, however, a disease is not inferred but merely suspected from a presentation. It may be suspected rapidly by System 1 thinking if the diagnostic situation is simple or if the physician is experienced.

Otherwise it may be suspected slowly by System 2 thinking.

In practice, it is customary to formulate a suspected disease as a diagnostic hypothesis which is submitted to tests for verification regardless of whether it is suspected by System 1 or System 2 thinking.

Therefore, we believe, fast System 1 thinking is not a source of diagnostic errors as it too generates a diagnostic hypothesis which is verified by tests due to the scientific nature of diagnosis.

In our view, diagnostic errors occur in practice due to lack of knowledge and experience in suspecting and testing diseases and not due to fast System 1 thinking during diagnosis.

We believe, it is the scientific nature of diagnosis in practice which prevents DPT that has been developed primarily with regard to reasoning in daily life from being relevant to diagnosis in studying diagnostic errors.

References