SUMMARY

Aim of the work

The aim of the work is to achieve a nearly optimal diagnosis and treatment of the thoracolumbar injuries.

Therefore, an expert system in the form an artificial intelligence computer program using a prolog language was used to achieve this aim.

Material and Methods

To perform such program, certain chronological steps were done:

First: A data base for diagnosis using the history, the clinical examination and the investigations.

Second: a data base for different types of osseous injuries and neurologic injuries in the form o rules and conditions.

Third: An artificial intelligence computer program to reach a specific diagnosis.

Fourth: An algorithm to reach a specific treatment.

Discussion.

A comparative study was done between the management adopted by the human decision making and the management adopted by the program through a 25 cases study.

Five cases were treated using conservative methods and 20 cases were treated with different surgical techniques.

Review of literature.

A review of literature was done covering every topic such as surgical anatomy, biomechanics, pathomechanics of both osseous and neurologic deficits.

One method of classification was adopted because it goes with our system in doing artificial intelligence expert system.

A special chapter in instrumentation biomechanics was put.

The Conclusion:

The program presented:

(1) A comprehensive file for the patient with high efficacy.
(2) All types of osseous and neurologic deficits.
(3) Diagnosis of trauma.
(4) The required investigations for each injury.
(5) The methods of treatment early and late for each injury. It provides a detailed plan of management which helps the surgeon to achieve a sufficient and accepted outcome described in the literature.
(6) Prognosis of every management.
(7) The specific referrences of each treatment.

The expert system provided a comprehensive management plan for thoracolumbar and spinal cord injuries for orthopedic surgeons and spinal surgeon - The system is a way of medical communication , education and teaching .

– Sharing of the local community authorities and the community medicine in a campaign to :

I) Define the national incidence of acute traumatic spinal cord injuries.
II) Identify the high risk groups in order to target preventive strategies.
III) Determine the etiologies.
IV) Evaluate services.

– A combined management plan approach for thoracolumbar injuries, and this necessitate construction of a spinal injury center.

– A locally manufactured spinal implant and instrumentation which provides a cheap, effective and easily used implant for thoracolumbar spine injuries.

– The thoracolumbar spine trauma expert system is a point system that can be used to assist but not to replace the surgeon in the decision making process .

– The spine surgeon must rely on common sense combined with clinical astuteness.

– There is no substitute for common sense.

– No substitution for meticulous surgical technique.

- Through a comprehensive details of history , clinical examination , a high cost investigations are not required except in a limited situations .

- Establishment of a medical research centre for spinal injuries for teaching and training .

- Establishment of wide spread governmental and non - governmental centres especialized in rehabilitation and occupational therapy for the spinal injured patients and supply them with adequate finance and social needs.