An expert system for men genital problems diagnosis and treatment

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Abstract

Male genital problems and injuries may occur quite simply because of the scrotum and penis are not protected like other organs. Genital problems and injuries normally happen through: recreational activities (like Football, Hooky, biking, basketball), work-related tasks (like contact to irritating chemicals), downhill drop, and sexual activity.

A genital injury frequently causes harsh pain that typically disappear fast without causing enduring harm. Home handling is generally all that is required for trivial problems or injuries. Pain, inflammation, staining, or rashes that are coexist with other symptoms might be a source for concern. Genital problems in men is one of the most common problems which requires fast intervention. In this paper we present an expert system that help men diagnose their genital problems and give them the proper treatment.

SL5 Object expert system language was used to design and implement this expert system.

Keywords: Artificial Intelligence, Expert Systems, SL5 Object language, Men Genital Problems.

1. Introduction

There may be many medications to treat sexual problems in males, depending on the causes. Problems that result from trauma, infections, as well as a simple irritation often cured by treatment or for a long time. In other cases, male sexual problems cannot be cured, but treatment can successfully reduce or eliminate symptoms. This applies to many diseases, through sexual contact are often dealing with transmitted diseases with medicine, but also some other issues that can be treated with drugs or surgery. While it may be impossible to completely heal every problem of the males, treatment options can be successful. One should consult his doctor to find the most effective treatment for a certain problem [1, 2]. Figure 1 shows male reproduction system.
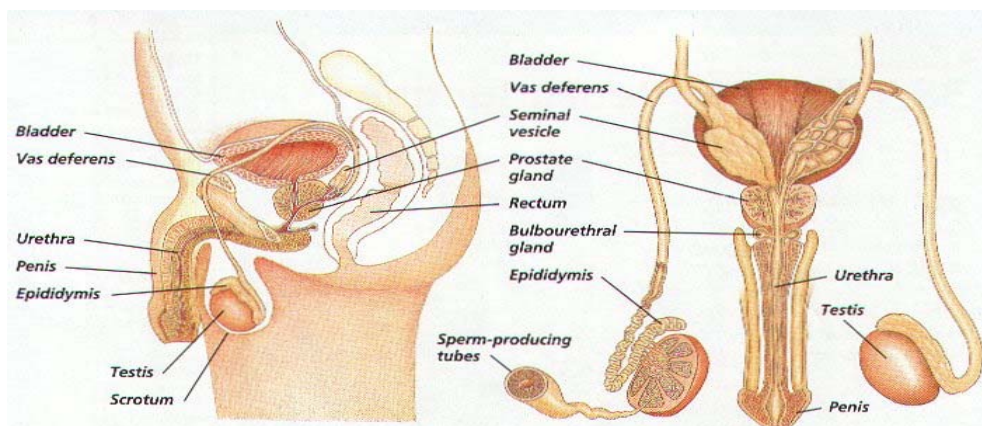

Fig 1: Male reproduction system [1]

1. Expert systems

Expert systems is a branch of artificial intelligence that have had the majority of impact, especially in medicine, finance, telecommunications, customer service, transportation, aviation, and more lately, written communication. Artificial intelligence systems based on expert systems by using technologies such as machine learning, natural language processing, speech recognition and machine vision, all of which are central to highly developed systems [16, 17, 19].

2.1 Advantages of Expert Systems
- Expert advice available on the system all the time

- Expert knowledge of a human expert is attained before he/she passes away
- Can be employed as to train staff to enhance their expertise
- Put together rational decisions without human emotions
- They do not get tired like human
- Give answers efficiently without the need of more staff
- Use natural language interface to make them user friendly

2.2 Limitations of Expert Systems
- Covers a specific field of knowledge
- Good expert system may require lot of effort and cost

- Expert systems are not as good as human experts.
- Expert systems do not learn from mistakes properly
- Dubious to come up with creative solutions

2.3 Definition of expert systems:
The expert system is a rather popular term that describes computer program, which came to the throne and individual performance or association that owns the expert knowledge and understanding in this field [19].

Today, as a rule, known as artificial intelligence, expert systems has a long history dating back to the 1970s. But, of course, such a system will integrate knowledge that contains an experience that has been collected and inference engine - a set of rules for applying the knowledge base for the exact condition to explain the program. They can improve complex expert systems with the additions to the knowledge base or the group regulations. Expert Systems have a good role in the field of financial service systems, healthcare, manufacturing, and video games [17, 19].

2. Knowledge Representation
The main sources of the knowledge to this rule expert system for men genitals problems diagnoses from [1, 5, 8, 9, 14]. The collected knowledge was converted in to Sl5 Object knowledge base (facts, rules and objects) syntax [7].
Currently, our expert system has 13 rules. This expert system can help the user with the following men genital problems.

- **Sexually transmitted infections**
Sexually transmitted infections are infections that one may get by having sex with a person who is infected. These infections are typically passed from one person to another through vaginal contact, but they may also be passed through oral sex or skin-to-skin contact. Sexually transmitted infections can be caused by viruses (hepatitis B, herpes, HIV and the human papilloma virus) or bacteria (chlamydia, gonorrhea).

- **Urinary tract infection**
A urinary tract infection is an infection in the kidneys, the bladder and the urethra. As blood pour through the kidneys, waste is removed and stored in the bladder as urine.

- **Yeast infection**
Vaginal yeast infections are attributable to a fungus known as Candida albicans. Yeast are small organisms that usually exist in a few numbers on the skin and within the vagina. The acidic environment of the vagina keep out yeast from increasing. If the vagina has less amount of acid, a lot of yeast may grow and cause a vaginal infection.

- **Genital warts**
Genital warts are small, flat, flesh-colored bumps. Genital warts are attributable to a lot of types of human papilloma virus. Human papilloma virus is associated with cancer of the vulva, anus and penis; however, it does not usually lead to cancer.

- **Syphilis**
Syphilis is a severe infection conceded from one person to another during sexual contact. The main cause of it is bacteria.

One can get syphilis by touching the blood or sores of a person who has syphilis, particularly sores on the person's mouth, penis, vagina or anus.

- **Prostate cancer**
Prostate cancer is when abnormal cells develop in the prostate gland. Prostate cancer is one of the mainly widespread types of cancer in men. A good number of types of prostate cancer develop gradually, but several types can be aggressive. This means the cancer grows rapidly and can proliferate to other parts of the body. As soon as cancer spreads, physicians state that the cancer has "metastasized."

- **Prostatitis**
Prostatitis is an irritation of the prostate gland. Prostatitis might be easily mystified with other infections in the urinary tract. When one think he has prostatitis, he should see his doctor.

- **Testicular torsion**
Testicular torsion happens when the spermatic string becomes twisted. This stops the blood supply to the testicles.

- **Testicular cancer**
Testicular cancer starts in one or both of the testicles. The testicles are situated in the scrotum, the skin that hangs up beneath the penis. Hormones and sperm are developed in the testicles.

- **Varicose veins**
Varicose veins are veins that are distended and protuberance above the surface of the skin. They may be twisted and are frequently blue or dark purple. Varicose veins are most generally found on the legs or feet, but they might be found on the groin.

3. Literature Review
Many expert systems have been designed [6, 10, 13, 15, 18, 20, 39] to help facilitating diagnosing and managing a lot of diseases and medical problems which considered as a part of applying Artificial Intelligence and computer science in order to help doctors, hospitals and health care facilities decision making to enable them to offer their health services in the correct way. One Expert System was found for diagnosing genital problems in infants [32]. However, our expert system diagnosing genital problems in men and recommend the proper treatment.

4. Materials and Methods
The proposed expert system perform diagnosis in men genital problems by asking questions that requires True/False answers. The proposed expert system will ask the user to choose the correct answer in each screen. At the end of the diagnosis session, the proposed expert system provides the proper diagnosis of the problem and present a recommendation for the treatment to the users. Figure 2 shows the first screen of the expert system session. Figure 3 shows how the expert system displays the diagnosis of the problem and the recommendation for treating the patient.
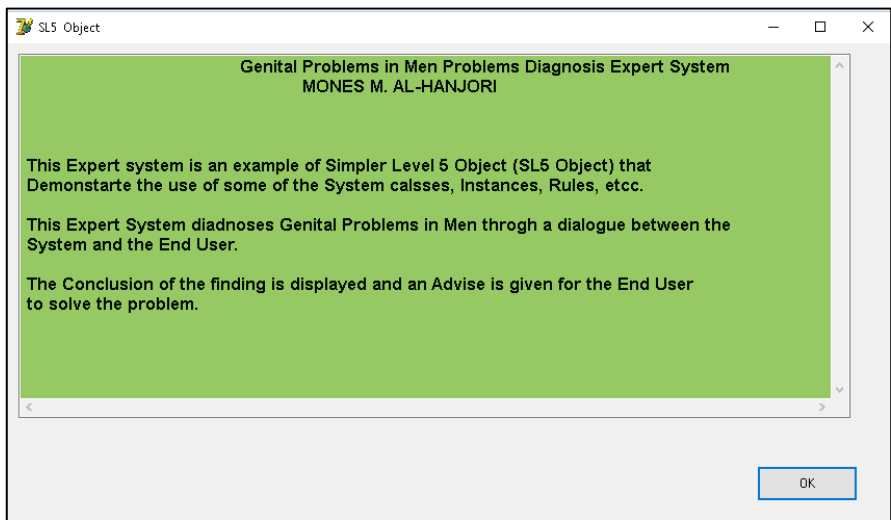
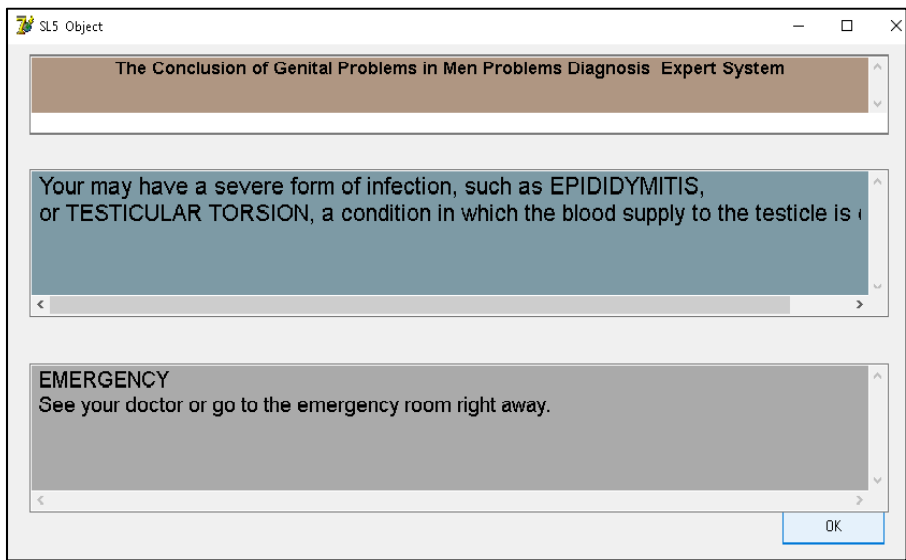**Fig 2:** First screen shot of the expert system diagnosis session

Fig 3: Shows the expert system diagnosis and recommendation

5. Conclusion

In this paper, we presented an expert system that consists of facts, rules, and objects to help men in diagnosing their genital problems, and help in giving them the proper recommendations for the treatment of the problems they have. The diagnosis is faster and more accurate than conventional diagnosis. This expert system does not require intensive training in order to be ready for use, because it is easy and user friendly. SL5 Object expert system language was used to design and implement the proposed expert system.

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