VORONEANU OANA

TD NR. CONTRACT: 33371/29.06.2004, NR. TEMA 111, COD CNCSIS: 184

SISTEM BAZAT PE CUNOSTINTE PENTRU STABILIREA ELIGIBILITATII, DIN PUNCT DE VEDERE HEMODINAMIC AL VALVELOR CARDIACE, LA SUBIECTII SUPUSI UNEI INTERVENTII CHIRURGICALE PENTRU PROTEZARE MITRALA

Rezumat romana:

Contributia unor noi ramuri stiintifice, cum ar fi descoperirea de cunostinte (Knowledge Discovery), relevarea de date (Data Mining), elemente de logica fuzzy si inglobarea de noi tipuri de date si cunostinte din domeniul biomedical, precum si descoperirea de noi cunostinte in bazele de date medicale deja existente este esentiala in medicina pentru obtinerea unui diagnostic cat mai exect.
In acest proiect, ne propunem sa contribuim teoretic, metodologic si tehnic la includerea de date si cunostinte de dinamica neliniara (procese haotice) asupra proceselor biologice (functionarea valvei mitrale) intr-un sistem bazat pe cunostinte, de uz medical. Datele existente in literatura recenta de specialitate demonstreaza ca nu exista suficiente date care sa ajute medicul specialist in luarea decizieie privind criteriile de eligibilitate cu privire la subiectii ce vor fi supusi manevrelor chirurgicale de protezare mitrala. Incercam sa introducem alaturi de datele cu privire la aspecte anatomice si morfofunctionale ale valvei mitrale si elemente de dinamica neliniara.
Introducerea in sistemele bazate pe cunostinte a datelor si a cunostintelor privind procesele dinamice neliniare ar reprezenta un avans considerabil in domeniu. Se justifica astfel punerea problemei descoperirii de cunostinte si relevarii de date cu privire la procesele dinamice neliniare in bazele de date existente sau in curs de constituire. In prezent exista prea putine reguli de corelare a criteriilor de eligibilitate din punct de vedere hemodinamic al valvelor mitrale, cu caracteristicile dinamice neliniare ale proceselor observate (presiunea sangelui, viteza, flux etc.), iar pe de alta parte exista numerose date (serii de timp) in bazele de date existente, care nu pot fi valorificate la acest nivel datorita cantitatii mari de munca necesara. Automatizarea prin metode de cautare automata a corelatiilor, a regulilor, ar reprezenta o contributie semnificativa a bioinformaticii in domeniul medical.

Rezumat engleza:

The contribution of new scientific branches, as for exemple, the knowledge discovery, data mining, elements of fuzzy logics and the gathering of new types of data and knowledge for the field of biomedicine, as well as the discovery of new knowledge for the already existing medical data, is essential in medicine in order to obtain an accurate diagnosis.
This project has in view to include nonlinear dynamics (chaotic processes) data and knowledge useful for the biologic processes (physiology of the mitral valve), in a system based on knowledges of medical use. Our approach will be from a theoretical, methodological and technical point of view.
Studies recently performed prove the fact that there are no sufficient data that could ease the surgeon's decision making as to the eligilibility criteria for the patients who will be subjet to surgery maneouvres for mitral prosthesis. What we are trying to do is to introduce elements of nonlinear dynamics, besides data concerning anatomical and morphofunctional aspects of the mitral valve.
Introducing nonlinear dynamics data and knowledge in the knowledge-based systems would be a considerable step forward. The issue of knowledge discovery and data mining concerning the nonlinear dynamics processes in the already existing or the ongoing data bases is thus justified.
At present, there are few correlation rules for the hemodynamic eligibility criteria of the mitral valve, with the already analysed nonlinear dynamics features (blood pressure, velocity or speed of the blood flow); but, on the other hand, there are numerous data (series of time) in the already existing data bases; however, these data cannot be taken into account, since they require a huge quantity of work. The automation by means of automatic research of correlations, rules, would be a considerable contribution of bioinformatics for medicine.