

TELECARDIOLOGICAL SYSTEM FOR ACUTE CORONARY SYNDROMES IN MAZOVIA DISTRICT OF POLAND

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The project of telecardiological system was proposed to support the interventional cardiology in Mazovia District for acute coronary syndromes (ACS) patients. The system gathers systemized ACS patient data from the distant medical centers. It is expected to improve the co-operation among regional and reference medical centers. The next task of this system is to shorten the time from appearance of symptoms to undertaking treatment, what should reduce mortality.

The overall structure of the system consists of 3 layers: 1 – reference (invasive cardiology) center, 2 – regional centers (hospitals), 3 – ambulance network. The software tools for communication among centers are Electronic Patient Record (EPR) accessible via Internet, relational data base MySQL in which EPR's are stored and expert system (ES) for risk assessment and advice on non-pharmacological and pharmacological treatment.

The database is a relational database. The basic property of such database is that the data is stored in tables with defined relations among them. The expert system supporting risk stratification and early treatment in ACS was developed and was integrated with the database. Knowledge base contains rules according to the current guidelines of the European Society of Cardiology [2]. Expert system consists of: a) risk voting system which votes on risk on the basis of points counted according to 4 risk scores (SIMPLE, TIMI STEMI, GRACE, ZWOLLE) and on BNP (Fig. 12); b) module suggesting the type of reperfusion therapy (invasive vs. fibrinolysis); c) module which chooses pharmacotherapy. Inter rater agreement between the expert system and the physician-expert was determined by kappa statistic. Data from patients were analyzed by developed expert system which performed risk stratification and suggested treatment. Good and very good agreement was observed between expert system and physician-expert in type of therapy (reperfusion, pharmacotherapy) choice. Addition of a new biochemical marker - BNP - into popular risk scores improved risk stratification in patients with ACS. Developed voting system significantly decreased classification error to risk groups. Changes in cut-off for votes on high risk improved sensitivity or specificity for risk classification dependently on the reference level of cardiological center.

Summarizing, great effort has been made to develop presented system which has been positively evaluated in practice. Now there is a need for wider implementation which requires cooperation among hospitals, some logistic solutions and decisions made by local authorities and heads of hospitals and departments, and last but not least financial resources.

Keywords: telecardiology, expert system, electronic patients record

References:

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