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Ultrasonic Coronary Thrombolysis

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The aim is to provide aid in technology implementation and utilization at AP-HP hospitals.

Methods

The first step is to synthesize existing data on technical, medical, economic, organizational, and ethical issues related to ultrasonic coronary thrombolysis in the treatment of myocardial infarction. In the meantime, expert advice is sought.

Acceptable study designs included randomized trials, controlled clinical trials, case series, and case reports. Fourteen papers met the inclusion criteria. They were tabulated and critically appraised in terms of methodology, design, outcomes, and the possible influence of bias.

Results

Ultrasonic coronary thrombolysis (UCT) is a new type of endovascular treatment, the principal indication for which is acute-phase myocardial infarction. The method is also being studied for the treatment of stenoses and chronic occlusions of aorta-coronary bypasses. Studies published to date have addressed only the feasibility of the technique. Very few studies have been carried out, including only small numbers of patients, but all have drawn the same definitive conclusions: this technique is rapid and effective. Its medical value lies in its greater ability to remove obstructions and in the higher quality of myocardial reperfusion resulting from the lower frequency of distal embolism. This technique may prove useful in patients at high risk for hemorrhage and in those at risk for thromboembolism. However, no long-term results are available, particularly with respect to the frequency of restenosis. To date, no study has compared ultrasonic coronary thrombolysis with other mechanical and chemical techniques. Comparative studies are currently under way. In particular, a prospective European study has been initiated by an industrial company, but the results will not be available for 2 to 3 years. The public price is about 16 035 USD for the equipment and about 959 USD for the Acolysis^{R} specific, single-use catheter. UCT is a method suitable for managing myocardial infarction in a hospital environment. In financial terms, for patients at high risk for hemorrhage the replacement of new-generation antithrombotic treatment (Reopro^{R}) by UCT results in a surcharge of 260 USD per patient. For patients who have had a thrombus for several hours, UCT combined with PTCA could replace PTCA combined with the administration of Reopro^{R} and the possible insertion of an endoprosthesis. This substitution would result in a surcharge estimated at 260 USD per patient without stent insertion, and a saving of 287 USD per patient with stent insertion.

Conclusion

The surcharge for UCT in the overall management of the patient is not currently justified by the clinical benefits obtained. The medical results of the trials already under way and of future multicenter studies will more precisely determine the clinical efficacy of this new technique. CEDIT, taking into account the stakes involved in the management of myocardial infarction, considers that ultrasonic coronary thrombolysis may be of value as an alternative treatment, but that the benefits of this technique have not been definitively demonstrated.

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