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Evaluation of Yields by Mobilization and Harvesting of Peripheral Blood Stem Cells

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Background : In the patients with hematologic and solid tumors, clinical application of peripheral blood stem cells (PBSCs) increases to reconstitute hematopoiesis after high-dose chemotherapy. To mobilize PBSCs, the hematopoietic growth factors have been widely used as single treatment or after chemotherapy. The important issue in the collection of PBSCs is to predict their potential capability to reconstitute hematopoiesis, which depends on optimal time of leukapheresis and the quantity of collected PBSCs. The aim of this study is to evaluate optimal time for efficient mobilization of PBSCs and significance of mononuclear cells(MNC), CD34+ cells, and CFU-GM colonies as the PBSCs parameters in the groups using different mobilization methods.

Method : Forty-eight cases of PBSCs mobilization with 146 cycles of leukapheresis performed from 1998 to June 2001 were reviewed, retrospectively. These cases were classified into three groups by mobilization method. In group 1 and 2, PBSCs were mobilized by hematopoietic growth factors after chemotherapy (group 1, nadir WBC less than 103/uL, group 2, nadir WBC over 103/uL). In group 3, PBSCs were mobilized by hematopoietic growth factors alone. The number of mononuclear cells(MNC), CD34+ cells, and CFU-GM colonies in leukapheresis products were measured. Relationship between these PBSCs parameters and clinical characteristics was analyzed, and inter- and intra-group comparisons of these PBSCs parameters were performed.

Results : Total 48 PBSCs mobilizations were performed and followed by total 146 and mean 3 leukapheresis per mobilization. In group 1 and 2, first leukapheresis was done on 14 days after mobilization chemotherapy, and 5 days after hematopoietic growth factor administration in group 3. Average number of PBSCs parameters in leukapheresis products were as follows: MNC 6.93 \times 10⁸/kg, 7.0 \times 10⁸/kg, and 8.8 \times 10⁸/kg, CFU-GM 37.20 \times 10⁴/kg, 20.77 \times 10⁴/kg, and 8.51 \times 10⁴/kg, CD34+ 21.56 \times 10⁶/kg, 21.87 \times 10⁶/kg, and 18.55 \times 10⁶/kg, in group 1, 2, 3, respectively. The differences of average MNC, CD34+ cell, and peak of CD34+ cell per leukapheresis among groups were statistically insignificant. The average numbers of CFU-GM per leukapheresis in group 1 were significantly higher than those of group 3(11.19 \times 10⁴/kg vs 2.90 \times 10⁴/kg, p=0.044). In group 1 and 2, positive correlations among MNCs, CFU-GM colonies, and CD34+ cell were observed, but not in group 3. Correlations between WBC on 1st leukapheresis and these PBSCs parameters were positive in group 1. Negative correlation between number of prior chemotherapy and the PBSCs parameters was observed. In group 1, increase ratio of WBC during recovery period was positively correlated with the PBSCs parameters without statistical significance. Sufficient dose of CD34+ cells requiring for reconstitution of hematopoiesis (5 \times 10⁶ cells/kg) was harvested in 85% of group 1 and 2, but in 58.3% of group 3. In 70% of cases, the number of CD34+ cells after 1st leukapheresis reached 1 \times 10⁶ cells /kg minimally required for hematopoiesis.

Conclusions : MNC, CD34+, and CFU-GM each other had positive correlation. Higher number of WBC on leukapheresis had higher harvested yield in group 1. More PBSCs products in leukapheresis were harvested when PBSCs were mobilized by growth factor after chemotherapy than by growth factor alone.

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Drug Use Evaluation of Hypoglycemic Agents in Type 2 Diabetes

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Background and Purpose : Complications of diabetes increase morbidity and mortality and decrease quality of life. Recently, UKPDS has been reported that strict regulation of blood glucose, hypertension and hyperlipidemia could decrease complications of type 2 diabetes.

This study evaluated use of hypoglycemic agents, control of blood glucose, frequency of complications and preventive management at a local 2ndary hospital in Korea.

Methods : The medical records of 208 type 2 diabetic patients who have had insulin or oral hypoglycemic agents at least 6 months were reviewed retrospectively. Data collection and analysis included diabetes-related characteristics, administered hypoglycemic agents, changes of hypoglycemic agent regimen, blood glucose changes, HbA1c changes, blood pressure changes, blood cholesterol changes, risk factors, complications and medications related to complications and risk factors.

The patient characteristics were evaluated with relation to macrovascular and microvascular complications. Use of hormone replace treatment was evaluated with relation to macrovascular complications.

Results : Initial therapy was almost sulfonylurea, then metformin or α -glucosidase inhibitors were added as combination therapy(initial monotherapy 92.3% vs. monotherapy in 2nd line 66.4%).

The major colmplications and risk factors were neuropathy(39.9%), hypertension(34.6%), gastropathy(25.0%) and coronary artery dz(23.1%). The complications and risk factors related medications were antiplatelet agents (34.6%), calcium channel blockers(30.3%) and ACE inhibitors/ angiotensin II R. antagonists(16.8%). Mean HbA1c was $7.82 \pm 1.92\%$, and over 7% during follow-up period. Mean systolic pressure was 133.63 ± 14.83 mmHg and mean diastolic pressure was 80.28 ± 8.24 mmHg. Most of patients achieved the goal blood lipid levels but was slightly high in total cholesterol and LDL(204.37 mg/dL and 116.86 mg/dL).

Patients with (vs. without) macrovascular complications showed significant differences in systolic blood pressure (137.70 ± 12.05 mmHg vs. 131.34 ± 10.87 mmHg, $p=0.0002$), fasting blood glucose(173.91 ± 50.22 mg/dL vs. 153.79 ± 34.50 mg/dL, $p=0.0066$), postprandial 2-hour blood glucose (241.72 ± 58.66 mg/dL vs. 212.82 ± 42.06 mg/dL, $p=0.0012$) and duration of diabetes(9.48 ± 6.88 years vs. 6.16 ± 5.55 years, $p=0.0017$). Patients with (vs. without) microvascular complications showed significant differences in duration of diabetes(8.83 ± 6.60 years vs. 4.33 ± 3.92 years, $p<0.0001$) and mean SCr(1.45 ± 1.96 mg/dL vs. 0.86 ± 0.18 mg/dL, $p=0.0016$). Hormone replace treatment was not related to macrovascular complications.

Conclusion : Diabetic patients in a primary care hospital did not achieved a target level of HbA1c less than 7%. Blood pressure and blood cholesterol were maintained their level as SBP<130mmHg, DBP<85mmHg, LDL<100mg/dL and total cholesterol<200mg/dL. For prevention of complications, antiplatelets agents and estrogen therapy should be more utilized in addition to antihypertensive agents and antihyperlipidemic agents

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Current Status of Medication Counseling Service at Community and Hospital Pharmacies in Korea Based on Nation-wide Survey Research in 2002

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1. Objectives

The research was designed to identify the overall environment that the Korean pharmacists face in providing counselling to their patients.

2. Methods

A nation-wide survey was conducted for both community pharmacists and hospital pharmacists. The results were used to highlight the environmental factors needed for better patient counselling. School curriculums in pharmacy school in Korea and the US were compared to identify future tasks in building more effective professional pharmacy education in Korea. Regulations in the US and Japan were also researched for this purpose.

3. Results

The survey found that most of the community pharmacists in Korea conduct patient counselling in the form providing information on dosing, dose, storage, and pharmacological action of drugs (in a descending order). Average counseling time is 1 to 5 minutes in 70-90% of the cases. Less than half of pharmacists keep patient medication records and counselling records. The survey discovered that, for better patient counselling, additional efforts are needed to build more reliable patient information, better management system (that will allow more active counselling), and better cooperation with other health professionals. The survey found that only 18.2% of the hospital pharmacies are currently offering inpatient counseling, while 36.4% are providing such services to discharged patients. Less than 50% of hospital pharmacies were found to be keeping their own patient medication records and counseling records. The survey found that, for improved patient counselling service, the hospital pharmacies in Korea need: more pharmacists with proper training, better understanding of hospital management executives, and enhanced reimbursement mechanism within the national health insurance system. They survey found that the number of pharmacy college courses related to patient counselling has increased in Korea after the implementation of Bun-up policy. Still, the number of such courses accounts for only about 10% of all pharmacy college courses taught in Korea. This is a much lower level of patient counselling education, in comparison with other developed countries.

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Prevention of Cardiovascular Events with Antiplatelet Agents in Diabetic Patients