Patients Perspective in Plasma Products (Focus on Hemophilia)

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Abstract
Effective treatment of inherited bleeding disorders has become available from plasma in the last 50 years. Plasma-derived medicinal products are used in Iran in a wide variety of clinical problems. Some of these products are manufactured by Iranian Voluntary donor plasma in contract to European pharmaceutical company. The safe preparation of plasma products is important; including screening blood donors, testing plasma for infectious pathogens. A perspective of the World Federation of Hemophilia (WFH) is to increase worldwide supply of safe affordable factor replacement therapy.
Key words: Perspective, Plasma Products, Hemophilia, Patients' Safety

Introduction

The inherited bleeding disorders especially hemophilia is one of the most well –known rare disease (1). Effective treatment for bleeding diseases has become available by plasma or recombinant products (1, 2). Treatment guideline and monitoring approach are developed (2) .In the past, transmission of viral diseases by plasma was problematic, but nowadays plasma products have strict protected controls for infectious diseases (3-5).

In 2008 voluntary and non remunerated Iranian donors donated 1.8 million units of blood. , that means a 25/1000 donation index. The total plasma production was 304,332 liters in 2010, of which 134,752 liters were used domestically and about 150,000 L of recovered plasma are reserved for fractionation. (3).

IBTO produces 4 kinds of end-products, which include albumin, Factor VIII, Factor IX and IVIG.One liter of plasma produces 160 units of FVIII, 200 units F IX, 4.5 gr of IVIG, and 25 gr of albumin.

The purpose of the article based on current epidemiologic and clinical data, to address therapeutic issues, and to review the safety and cost of products used for treating hemophilia patients.

Epidemiology

As mentioned before, hemophilia patients need more attention due to severe hemorrhage and its complications. According to transplant and especial disease office in Iran and also Iranian comprehensive Hemophilia care center (ICHCC) data registry, 7128 patients were registered with hereditary bleeding disorder. Hemophilia A was 4304 patients, Hemophilia B 837 patients, Von Willebrand disease 704 patients ,platelet disorders 496 patients, Factor VII deficiency 232 patients , Factor XIII deficiency 183 patients ,Fibrinogen deficiency 41 patients and others was 263 patients. Factor VIII usage was 1.7 /capita. The life expectancy in hemophilia is increased and age distribution goes older than 20 years old. Table 1 shows hemophilia A age range.

Age range (year)	0-10	11-20	21-30	31-40	41-50	51-60	61-70	> 70	total
Hemophilia A (Number)	545	853	1346	824	424	185	79	48	4304

Table 1: Hemophilia A age range

The cost of hemophilia treatment and other plasma product

The cost of hemophilia treating has increasing due to treatment protocol, controlling for safe product for viral inactivation, treatment of inhibitory antibody and new production method (recombinant method) (5-7).Some times, hemophilia patients have challenge in their treatment, due to financial problem (8-9) . Plasma-derived medicines consumed in Iran during 2006–2008 with the share of medicines produced from Iranian plasma through IBRF contract fractionation project was IVIG 610/1319 kg, human albumin 417/2375 /10kg, and factor VIII 21/371 MIU (3).Total cost for imported plasma product and some recombinant factors in Iran was 114,915,017 USD in 2010. Table 2 shows detail of imported plasma product in Iran.

Product	2009			2010		
	Unit or g	Cost(USD)	Domestic FFP	Unit or g	Cost(USD)	Domestic FFP
Albumin g	8,927,430	45,356,792	664,600 (7.4%)	8,676,640	43,282,341	590,700 (6.8%)
Anti D µg	49,857,300	8,846,611	0	34,753,200	6,180,642	0
Factor IX U	15,075,500	4,522,650	9,614,500 (63.7%)	15,723,000	4,716,900	15,104,000 (96.06%)
Factor VIII U	109,865,000	24,170,300	6,986,500 (6.35%)	113,692,000	25,012,240	7,617,364 (6.70%)
IVIG	g 345,931	28,468,964	g 131,872 (38%)	g 286,556	21,520,040	g 142,954 (49.8%)

Table2: Detail of main imported plasma product in Iran in 2009-2010

The cost shows modern treatment of hemophilia patients is expensive, but quality of life and treatment satisfaction wasn't change dramatically (10).

Treatment Challenges and Complications

Most hemophilia treatment centers in Iran use on demand protocol. Cost of hemophilia treatment have risen every year and may be total Per capita drug consumption will increased for older patients .Younger patients have little medical problem in comparison to older patients except inhibitory antibodies ,that it appears in early life(11). But older patients complicated by HIV,HCV ,HBV and physical disabilities due to joint damage .Health related quality of life in older patients due to complication was decreased and increasing dependency to medical treatment(12) . Most of patients use home treatment protocol and admission is only for life threatening events .Our challenges are jobs finding and employment, psychosocial problem, addiction, marriage, body image, insurance, altered family relationship and early retirement(12,13).

Demand and Supply in Iran

It is expected that treatment of clinical choice and patient preference and expectations in Iran on plasma derived factor VIII and IX, and we don't use recombinant products. It is expected that the focus for enough safe factor preparation. The World Federation of Hemophilia Global Survey indicates per capita factor VIII usage of 5.32 In-

ternational Units (IU) and 0.72 IU for factor IX (in countries with GNP above US$10,000 per capita),but in Iran 1.7 /capita.According to modern treatment some countries use around 6-8 IU/capita for factor VIII (10-12). Iran would have been same the usage of other similar health care economies, resulting in optimal treatment for many people, but we have problem for orthopedic surgery. The reports showed 10% increase per annum has been considered a reliable figure for estimate of future demand (9). Governmental bleeding disorders registry program must the main strategy to ensure accurate and reliable data about clinical practice and requirements.

Other aspects which may also contribute to increased demand for plasma factor therapy, such as children treated with prophylaxis continuing this into adulthood, people living longer with haemophilia and co-morbidities, including the need for orthopaedic surgery, obesity in children and adults (dose is weight related)(10-12).

Future of Hemophilia

Modern treatment strategy based on bleeding prophylaxis; identify families at risk and carriers' mutation, strict controlling program for detection viral infection and use fully licensed products(9). Also gene therapy may cure patients, but need more studies to prevent serious complications. Iran works on transgenic animals to produce enough factor VIII and IX.Finally, safe blood product is mainstay in hemophilia treatment (8-12).

Conclusion

In the past to now treatment modalities in hemophilia change and now, we find tragic improvement in all aspects of hemophilia management. Key point is safe blood product and adequate factor to prevent complication and better quality of life.

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Disclosure

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