Challenges in the treatment of Iranian patients with leukemia in comparison with developed countries from the perspective of specialists

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ABSTRACT

Evaluation of the factors associated with treatment process of leukemia and comparison with current related approaches in developed countries can present a good indicator to assess the weak and strong points in healthcare system of our country in leukemia treatment. The objective of this research is general and specific description of the challenges and shortcomings in Iranian healthcare system and monitoring of hematologic malignancies as well as comparison with developed countries. Our study is a descriptive-cross-sectional study. 100 hemato-oncologist , pathologists, and faculty members throughout the country were selected by random cluster sampling. Data collected using questionnaires with Cronbach's alpha coefficient of 0.76 . SPSS and Chi-square test were used for data analysis. According to the specialists, lack of advanced diagnostic facilities as well as cell and BM banks together with high treatment expenses are the main factors contributing to poor treatment processes in Iran, which are far from worldwide standards.
The use of novel currently methods used in developed countries for leukemia treatment, financial and psychological support of patients under treatment , making underprivileged provinces well-equipped ,balanced specialist service distribution relative to capital city either in diagnosis or treatment are factors which makes system standardized. Moreover, integrated institutional work in relation to leukemia incidence and statistical analysis of mortality and morbidity rate can pave the way for reducing and eliminating the problems in diagnosis and treatment of leukemia patients.

Keywords: Treatment, Leukemia, Specialist

INTRODUCTION

The uncontrollable effects of malignant diseases and those mental and economical effects on a society is well obvious, and currently they considered as one of the most significant health problems in the world [1]. It can be stated that malignancies are the second and third cause of mortality in developed and underdeveloped countries, respectively [2]. It is estimated that with uncontrollable growth of human exposure to environmental risk factors, we will observe the higher incidence of cancers in the following years, as a result, the chance for develop the cancer for each person would be 50% to 60% in

2050 [3].Statistically, as most countries in the world, the rate of cancers in Iran is increasing. In some cases this prevalence is higher than the standard levels [4]. according to the Iran ministry of health report published by 2007 (based on the report of Pathology center, exclusively), cancers of skin, breast, stomach, colorectal, liver, hematopoietic system, esophagus, prostate, lung, brain, and the central nervous system (CNS) are the most prevalent malignancies in Iran [3]. among these, hematological malignancies with 5.7% incidence ranked sixth , showing 1.3 increase relative to 2005 report. Currently based on the standards of   health organizations,

preventive strategies show considerable priority than treatment protocols. Various molecular methods, including microarray analysis, polymerase chain reaction (PCR), biocheeps, etc designed and marketed by which individuals in risk of different diseases can be detected prior to their predisposing in order to prevent their involvement. In fact the overwhelming costs of treatment will be obviated through these strategies and it will be a remarkable help for personal and social health. Therefore, presently, determining the national strategies for cancer prevention and control, especially blood cancers is regarded as one of the social health priorities. It is clear that punctilious and accurate diagnosis, itself, can be a good start point for a desired treatment process [5]. Today, blood cancers or leukemias constitute about 8 percent of total neoplastic disorders in the human population, and considered as the fifth prevalent cancer in the world [6-8]. Treatment of hematological malignancies is far complicated and depends on the age, health status, type of malignancy, and the rate of it´s distribution [9-14]. Through all the required options for a desire diagnosis and treatment process, facilities and equipments are noteworthy. In the other word Providing the required diagnostic equipments is prerequisite for other treatment needs [15].

All over the world, diagnosis of hematological malignancies is primarily accomplished by physical examination, laboratory findings, including morphological evaluations (peripheral blood and bone marrow films), cytogenetics, immunophenotyping, flow cytometry, FISH, cytochemistry, and a variety of molecular methods [16].

Remedies, currently used to treat the leukemias, consist of chemotherapy [17-19], biotherapy (or immunotherapy in which the immune system becomes more potent against cancer cells by means of especial substances, thus prevent cancer progression) [20], bone marrow transplantation [21], and using stem cells [22-24]. Bone marrow transplantation is accomplished as either autologous and allogenous, and it can be fulfilled through both bone marrow and peripheral blood as the source of stem cells [25]. The purpose of this method is to put the patient in the remission phase in order to obtain a comparatively perfect and irreversible cure. Today developed countries

have been able to subside the mortality rates due to blood cancers, by using the novel methods based on elimination of aggressive methods, and diminishing the costs and wasting the time compared with traditional methods. Of these novel methods are nutritional support for patients [26,27] and pain management [28,29] of leukemic patients. Indeed, the goal of these strategies are to enhance the patients cooperation with the treatment team during the diagnosis and treatment course. The pain management might consist of radiotherapy for bone pains, opioid drugs, massage therapy, and using the anesthetic drugs [21]. It is worthwhile to say that unsatisfactory complications, such as nausea and vomiting emanating from chemotherapy for cancers, causes psychological resentment which could overshadow the treatment protocols, as well. Recent advancements have resulted in development of anti nausea drugs, including Kisseptin 1 (K1) receptor antagonists, and 5-hydroxytriptamin 3 (5-HT3) which are rather expensive [30].

Today one of the most serious problems to treatment is high expenditures. Hence many supportive institutes have been established for mental, psychological, and financial aids, but their activities have not met the demand [15]. This institutes are often charities and social, thus no one can have great expectations from them. In this situation the governmental as well as nongovernmental supports become more noticeable. These supports must be focused on the requirements previously mentioned for cancer patients [31].

According to this fact that no study has made so far on problems of blood malignancy treatment, and regarding that developed countries shifted their treatment approaches toward novel, nonaggressive methods, this study was made as the first thorough and detailed investigation into the problems of Iran health system by iranian collaboration of hemato-oncology and pathology specialists. We hope that the findings of this study would reflect the limitations existed in Iran in leukemia therapy, and to motivate further complimentary studies. Conclusively, this study will reflect the current leukemia therapy problems in Iran and will suggest solutions with the hope of improving the social health.

MATERIALS AND METHODS

The researcher made questionnaire was designed and the validity and stability were evaluated. The face validity of the test for 30 cases was taken based on expert´s perspectives, and required amendments were made. The content validity was also provided according to the specialists and most up to date version of hematology and oncology references. The test stability also calculated using Cronbach´s alpha coefficient of 0.76 with authentic validation which indicated that the questions had strong correlation.

The study is a descriptive- cross sectional with the population consist of 100 members of hemato-oncology and pathology specialists working in educational as well as personalized hospitals, and the academic staff throughout the country. The research units were determined as many as 100 members by count and exclusively selected according to their inclination to attend in our study. Data collection was made through questionnaire and the items were divided into two main groups by a review on previous studies. In the first group of questions we designed demographic information (eg .age, sex, living province, university, and the last educational degree). For the second part of questions we considered some questions on treatment of leukemia in Iran, such as treatment of patient at specialty health center in the patient living city, presence of novel diagnostic facilities, the causes of delayed treatment, presence or absence of a specialty bone marrow bank in the specialist´s living city, using of novel, FDA approved drugs used for leukemia treatment, the propagation of novel treatment methods like cell therapy in the province of specialist´s locals service, balance in distribution of equipments, specialists, and other facilities in proportion to the leukemia patients distribution throughout the country, Look back process after early treatment, and costs of leukemia treatment. Finally we designed some questions regards to coherent community deal with statistical information about incidence and mortality rate in the province of health service. It is important to mention that all the questions were designed in three choice form, and according to the developed countries criteria and approaches regarding to leukemia treatment. The quantitative information resulted from the primary examination of the questionnaire were analyzed by SPSS and Chi-square test.

RESULTS

The population of study consisted of 100 members with the age range about 29-72 (mean age, 44 years) constituted of 62% male and 38% female. Of these, the percent of hemato-oncologists and pathologists were 38% and 16%, respectively. The related items and results from three choice questions are indicated in table 1. According to the results, only about 3% of specialists stated that healthcare center in their province is able to provide complete treatment facilities, and 49% asserted that the local health centers cannot fulfill the requirements. Furthermore, about 48% believed that there is trivial facilities for treatment of leukemia patients in their province. Overall evaluation of diagnostic facilities in Iran compared with developed countries indicated the high levels of differences. 49% of specialists have already well addressed the lack of novel diagnostic facilities and its relation to delayed treatment of patients. Interestingly, most of these experts were those who work in level 2 and 3 cities (deprived provinces which are far from the capital). In this regard 31% asserted that in addition to the shortcoming of novel diagnostic equipments, there are some other factors overshadowing the punctual treatment of patients. In contrast, approximately 20% of specialists believed that there is no association between shortage of novel techniques and delayed treatment of their patients. Regarding to the other group of questions focused on the propagation of novel treatment methods like cell therapy in the patient´s local service, about half of specialists asserted the outperformance of novel treatment methods in the patient province, 31% mentioned the limit performance, and only 19% claimed the presence of required facilities to perform these methods in their working province. In relation to the use of novel, FDA approved drugs used for leukemia therapy which routinely prescribed in developed countries, almost 55 percent of specialists acknowledged that they do not use these drugs to treat their patients, while about 27% mentioned that they prescribe theses drugs narrowly, and

according to the answers of 18% these drugs have been persistently used to treat their patients in Iran. Presence or absence of a bone marrow bank in the working province of specialists for treatment of needed patients were also regarded in the other part of questionnaire and the related results demonstrated that 63% of individuals suffer from shortcoming of a bone marrow bank. Contrary, other 37% confirmed the availibility of bone marrow bank. It is worthwhile to mention that the later group was primarily from level 1 provinces (like Tehran, Esfahan, Shiraz, Mashad, and Tbriz). In the following questions the balance of equipments, facilities and other treatment facilities distribution in different provinces were asked and the obtained results indicated that 63 percent of specialists believed the unbalanced distribution of diagnostic and treatment facilities among different cities. They believe that required facilities are concentrated in the large cities and the patients are referred to these cities for treatment. In this study, evaluation of overwhelming costs and their effects on patient treatment course demonstrated shocking results, so that the majority of specialists (more than

70%) presented that staggering costs is one of the most tremendous cause to make people reluctant to follow their treatment procedure and thereby to the failure this process. In other question associated with the presence of information about the epidemiology and mortality rate due to blood cancers in the related provinces, 46 percent of experts (almost half of the assessing population) emphasized the lack of an accurate and reliable document in this regard, and 39 percent were also believed that these data are recorded partially and incoherently in their working province. One of the most significant questions asked on the questionnaire was addressing the fallow up and look back status of patients after treatment as this item is one of the integral part of treatment process in developed countries. Data resulted from this part of questionnaire showed that 80 percent of physicians perfectly fallow their patients after treatment, and 15 percent partially assess their patient full treatment process. In this case, almost 5 percent of specialists also stated that they did not visit their patients after early treatment.

Table 1. items associated to 15 asked questions on the questionnaire and related results after interpretation by related software. The questions are condensed as 9 main topics here.

Items and the related percents	Yes	Partially	No	Total score
Complete treatment of patients in the living city.	3	48	49	100
Prevalence of using novel methods to treat the patient in the specialist´s living province.	19	31	50	100
balance of facilities and specialist's distribution with the leukemia patients around the country.	2	35	63	100
Using of novel, FDA approved drugs for leukemia therapy routinely used in developed countries.	18	27	55	100
Is lack of novel diagnosis facilities the cause of delayed treatment of patients?	49	31	20	100
Presence of an equipped bone marrow bank in the working province.	37	0	63	100
Is the Costs of of treatment a main reason preventing the patient to persist their full treatment course?	73	21	6	100
Are the patients acceptably followed up after their early treatment?	80	15	5	100
Presence of accurate and reliable statistic documents on the incidence of leukemia and it´s mortality rate in the working province.	15	39	46	100

DISCUSSION

The aim of this study is to determine the problems and shortcomings in treatment of leukemia patients, and related requirements. The finding of our study evidenced that of the current obstacles on diagnosis and treatment of patients

with blood cancers are the lack of diagnostic and treatment facilities, non uniform distribution of the facilities and specialist in the country, high costs of treatment and depriving from novel methods in leukemia treatment. Early establishment of the required diagnostic methods

as a basic item in treatment process is a prerequisite for the accommodation of different treatment needs [32]. Based on results of this study, almost half of the specialists in Iran consider the shortage of novel diagnostic facilities as one of the contributors of delayed start of their patient treatment, and interestingly, the same specialists believe that the leukemia therapy is unsuccessful in their province. About 63 percent of experts attributed this problem to the unbalanced distribution of diagnostic equipments and treatment facilities through the country, which indicates that accessibility of advanced diagnostic services is the integral part in early treatment of leukemia patients. These shortages are more sensible in the case of flow cytometry devices, molecular diagnosis, and cytogenetic analysis [32]. The molecular diagnosis, mostly made in large cities, such as Tabriz, Tehran, Shiraz, Khorasan Razavi, and Kerman, while small cities are deprived from these facilities, and patient´s samples are sent to large provinces in order to diagnosis.

Thus in addition to wasting the time and expenses, this incongruence distribution results to delayed diagnosis and treatment process. Majority of Iran specialists do not initiate the treatment process before definite diagnosis or they suffice the diagnosis by nonspecific methods based on findings from the peripheral blood and bone marrow films, or in some cases they prefer to treat the patient through nonspecific remedies which in turn can leads to inaccurate diagnosis and treatment, thereby might have irreversible complications for patients [32].

Treatment methods currently used to combat the blood malignancies consist of chemotherapy [17-19], biotherapy [20], bone marrow transplantation [21], and stem cell therapy which commonly accomplished in most health centers around the world. In developed countries, in addition to accessibility to mentioned therapeutic choices, specialists are seeking to present more inexpensive and nonaggressive methods like nutritional supports and pain management during treatment course [28-29], moreover they have managed to utilize novel molecular therapies for leukemia. Considering these facts, in this study we have demonstrated that 55 percent of specialists admited that they do not prescribe

novel, FDA approved drugs routinely used in developed countries for treatment of leukemia patients. In the other hand 50% of experts asserted that they do not use modern methods for treatment of their leukemia patients in the working province. furthermore, accessibility to these therapeutic options alongside with current therapies results to remarkable quench of the mortality rate due to blood cancers.

Today bone marrow transplantation is also one of the most common approaches for leukemia treatment especially for all the sectors of society around the world [21]. To fulfill this goal finding the compatible donor is the main part of the process. Thus presence of a far- reaching bone marrow bank is one of the most essential needs for bone marrow transplantation in every specialty center. The findings of our study dealing with the existence of a especial bone marrow bank in different provinces of country has a sobering fact and that is, according to perspective of 63 percent of experts one of the most important problems in treatment of leukemia patients who need for bone marrow transplantation is inaccessibility to a bone marrow bank in the working center. In this situation patients, inevitably refer to the centers possessing these facilities and in turn make some difficulties for these equipped centers.

Furthermore this can affects the quality of treatment for the patients. Our investigation on one of the largest center for treatment of blood disorders in Tehran, Shariati hospital, showed that because of insufficient facilities, hospitalized patients inevitably released before the schedule time, otherwise the other patients waiting for services may die. Moreover due to release of patients before the schedule time, there is no guarantee for their survival. It should be stated that shortages of experienced specialists and other staff in proportion to the mass of visitors, low levels of services, and long time waiting of patients to reach the schedule time for transplantation are the defects, which according to the medical staffs, lead to situation in which the mentioned process would be far from the worldwide standard levels. Considering these facts, it can be said that development of bone marrow banks with suitable distribution in health center all over the country as the first step can

effectively pave the way to solve the difficulties facing with bone marrow transplantation.

In the case of cost payment for diagnostic and treatment services by the patients in Iran the considerable results of this study and the previous study of our research team is that, majority of patients afford the costs of diagnosis, however in treatment phase especially in purchasing the required import drugs, they faced with different financial problems. In current study, 93 percent of specialists considered these cumbersome costs as one of the main reasons preventing the leukemia patients from initiating and following up their treatment courses in Iran. Eloquent study made by our colleagues also verified that one of the most crucial concerns of cancer patients is the lack of sufficient communities and institutes to provide financial support from them [15]. Generally, majority of related communities in Iran are charities and social which mainly focused on emotional and social aspects of disease and no one can have great expectations from them to settle down the financial difficulties the leukemia patients involved in. our study proved that the supports either in leukemia diagnosis or treatment from governmental and personalized institutes as well as different insurance organizations can play a critical role to keep pace with other countries toward the modern global standards. In a part of our study we demonstrated that one of the current problems in treatment of leukemia patients in the country, according to specialists, is lack of an appropriate mechanism for receiving the special drugs. This problem roots in the fact that the insurance organizations do not undertake the costs of these drugs, and although the patients receive the governmental subsidies, they cannot afford the debilitating costs to persist the treatment course. In the case of monitoring the patient by specialists after early treatment, we found out that approximately 80 percent of physicians in Iran take their patients under persistent consideration, and this fact can be remarkable and a desired

result. Whereas, 20 percent of clinicians attending in our study attributed their proportional negligence to this believe that monitoring of their patients after treatment was not necessary.

These thinkable results showed that the country is benighted from the modern standard levels. Finally according to our investigation, lack of an efficient and coherent statistical study regards to the correlation of different type of leukemia and the mortality rate due to blood malignancies is sensible which itself can be resulted from indifference of government to the diagnosis, prevention and control of leukemia in Iran. considering the observing of the current realities as well as growing incidence of malignancies and their mortality, we need to concentrate our financial and social supports on improving the levels of treatment.

CONCLUSION

According to the results of this study we can infer that most of the problems associated with leukemia therapy in Iran is rooted in shortage of modern facilities,and non- uniform distribution of facilities in the country, while developed countries have passed these obstacles and are moving toward more specialized and novel techniques to cure he patients by dedication of suitable policies. Indeed, by utilizing the novel methods used in other developed countries for treatment of leukemia, elucidation of accurate and up to date incidence and epidemiology of leukemia in Iran, psychological and financial supports of patients during the treatment course, focusing of governmental policies on drug supports, equip all the provinces with modern health systems especially bone marrow banks, as well as increasing the members of specialized healthcare centers and experienced physicians, we hope to reach the levels of treatment to the modern global standards and to appropriately respond one of the most substantial concerns of leukemia patients and society.

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