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Research on Rehabilitation Factors Related to Chinese Senile Liver Cirrhosis based on Hospital Information System

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Abstract

Hospital information System is a new research field; the generalized medical information includes all information products and technologies related to health. In this paper, we try to analyze rehabilitation factors related to senile liver cirrhosis concurrent hospital infections, by using the data from hospital information System .We select 60 senile liver cirrhosis patients received by hospitals from July 2012 to July 2014 as samples, review and analyze their clinical data, investigate relevant experts' valuable recognition data, and explore factors related to senile liver cirrhosis concurrent hospital infection patients. Result shows that Senile liver cirrhosis patients are prone to hospital infections, and gram positive bacteria are the main pathogen. There are numerous rehabilitation factors, including age, aerobic exercise, complication, antibiotic, albumin, invasive operation factors, etc. Clinical staff should implement etiological treatment and establish corresponding preventive measures to reduce the incidence of hospital infections.

Keywords: *Hospital information System, Senile, Liver cirrhosis; Large-Scale data*

1. Introduction

With the rapid development of medical information, the traditional hospital digital information system and electronic health records system has been far from meeting the requirements of mass medical data storage, analysis and data services. After the massive medical data generation and collection, how to store heterogeneous, massive, real-time, diverse data to achieve the rapid and accurate response of large-scale complex health data query, how to use data mining method, the massive medical data analysis, fast and effective for the user to provide valuable medical data services, to achieve the effect of disease prevention first, become a big data era medical field need to solve the problem [1]. In medical data collection, with the regional medical information system, medical data center and data exchange platform construction, including structured and unstructured medical and health data will continue to expand and present a geometric level growth. At the same time, the generation and collection of medical data is no longer limited to the single environment of the hospital, which will include a variety of data sources from the family, private clinics, experimental testing center and other institutions [2]. And with the development of the Internet of things technology and wearable devices, we can collect their own medical data at any time. Medical data is no longer the exclusive resources of a medical institution, it can provide data sharing and exchange in the region and the larger regional level until the national health information system. In medical data service, the current medical care system in China still has the problem of medical resource allocation, service cost, service cost, service quality and service efficiency. How to improve the efficiency and diversity of data services through large data processing and mining technology is an urgent problem to be solved. In the near future, we can through the mobile phone application directly to query different hospital records, prescription, inspection results, a list of charges; chronic diseases such as

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diabetes, blood sugar will be whenever and wherever possible self testing blood pressure data uploaded to the medical data center, data mining platform can automatically determine the dynamic development of the disease, and sent to the doctor remote diagnosis decision analysis; out of a lot of medical information from massive medical data mining, can be used to assist the grassroots doctors make diagnosis and treatment recommendations for patients; the patient's vital signs, medical imaging, diagnosis, prescription, operation and hospitalization bill the full cycle data will be carried out comprehensive analysis the track, changing the training data mining, to provide support for the subsequent design treatment; at the same time by collecting and analyzing large-scale medical and health data, can be used for screening, analysis and early warning epidemic of chronic diseases and epidemics, and for the public health management department of prevention and intervention plans and actions to provide advice and reference.

Liver cirrhosis is the end stage of chronic liver diseases and a kind of severe and irreversible liver disease, especially when decompensate patients suffer from persistent jaundice, refractory ascites, persistent or obviously delayed prothrombin time, and show complications, all prognoses are relatively poor [3]. Currently, there is still a lack of reliable specific therapy for liver cirrhosis, and the treatment emphasizes etiology and general symptomatic treatment to alleviate the condition, extend the compensated stage and maintain the labor force [4]. The decline in the physical function of each senile liver cirrhosis patient is related to the decline in each organ function and low immunity, prone to complications and comorbidities, with long stay in hospital, concurrent hospital infections often occur. Hospital infection may prolong the length of stay, increase family financial and physical burden, reduce the quality of care, and affect the prognosis. To protect the living quality of senile liver cirrhosis patients and reduce the incidence of hospital infections, we select 80 patients as samples to study factors related to senile liver cirrhosis patient concurrent hospital infections. Research results are hereby reported as follows.

2. Literature Review

2.1. Hospital Information System

Medical information is the hospital information System (HIS), which is based on the Prof. Collen Morris., according to the definition of the United States in 1998: “the use of electronic computers and communication equipment to provide information and administrative management information and the ability to collect, storage, processing, extraction and data exchange in the hospital” [5]. The generalized medical information includes all information products and technologies related to health and health, and is a deep and complex information technology application domain.

We generally refer to the medical information is the main hospital medical information, the focus is to establish and make full use of the medical service and management of the data system and management information system [6]. At present, most of the people's understanding of medical information system is still in the narrow hospital management process. Because of the most contact with the computer technology, such as medical expense settlement system, the hospital management is the goal of hospital management. However, with the rapid development of society and economy, and the continuous progress of network technology, the computer has not met the needs of medical workers and medical treatment, people need to be more convenient and reliable medical services, so the new goal of medical information is to establish the information resources sharing between patients, hospitals, urban community, government departments and medical insurance departments.

Kang (2011) pointed out HIS is a combination of information, medicine, computer, management and other disciplines of cross science, has been widely used in many developed countries, creating a very good economic and social benefits [7]. Ariza (2012) pointed out HIS is a modern hospital development, operations and technical support, the use of hospital information management system is in order to more standardized, scientific, modern means to strengthen the hospital management, and improve the work efficiency, improve medical quality, so as to establish the new image of modern hospital [8]. This system supports the management and service of the hospital, reduce the labor intensity of the staff, assist the hospital management, improve the hospital work efficiency, so that the hospital can get better social benefits and economic benefits, such as financial management system, personnel management system, hospital management system, drug inventory management system, *etc*. Gao (2011) pointed out LIS is a system which can complete the information management automation and the clinical examination information system [9]. Fernándezo (2012) pointed out main job is to test the experimental instrument returned by the data after analysis, automatically generate print reports, through the network uploaded to the database, so that doctors can easily see the results of the doctor workstation, LIS has become an essential part of hospital digital management [10].

This system can bring the following benefits: First, provide online facilities for health care workers, so that they can get the test room information in a timely and accurate manner. Including specimen checkout room number, date, location and status and register with the patient's identity, name, type, *etc.*, current or past the test result of the cumulative report; second, keep the reliability and accuracy of test results. Using LIS system internal inspection and quality control procedures, try to reduce human error; third, laboratory technicians to provide intelligent operation mode, so that processing such as in accordance with the rules of the audit inspection results, Chen (2003) pointed out cancel inspection items, analysis and processing of the results of the test results, the implementation of special orders, add code comments and deal with quality control and other issues more easily, which will enable the inspection staff to get more accurate and clear results [11]; Fourth, less non technical working hours, such as: answering telephone inquiries and editing inspection statistics, quality management statistics report, etc; Fifth, real time automatic search results, by automatic fax or remote printing can be processed by the computer data sent to the nursing area, can also be transmitted to the patient's electronic medical records, the entire report process without the use of paper [12]. The test room data can be transmitted to the main diagnostic doctor by email or wireless communication technology; Sixth, increase health care workers, including the clerk and the file of the staff to work on the interests, responsibilities and satisfaction; Ma (2010) pointed out LIS improved the operating procedures of the inspection room, including the use of the label testing specimen [13]; and test analysis instrument to achieve both read the test data, and the program automatically control the analysis of two-way docking, improve the bilateral docking interface, reduce the time consuming to detect duplicate entry, so as to improve the efficiency of reporting results and technical staff's work efficiency.

2.2. Cloud Computing and its Key Technologies

Cloud computing is a computing method based on the Internet, he can make the sharing of resources, information and software, such as the need to provide equipment, similar to the power grid system. Arvaniti (2010) pointed out the basic principle of cloud computing is the use of server cluster to provide the Internet users with storage [14], computing, hardware and software services. Huang (2012) pointed out Medical cloud is the cloud computing technology applied to the medical industry, to improve the level of medical information and service quality [15]. Benefits of medical cloud computing, reduce the cost of building the system, and make people more convenient access to health

care and other services. Through the construction of the cloud, the sharing of medical equipment and other resources, the gap between urban and rural medical and health care, and greatly improve the utilization of medical resources. For ordinary patients can get through the cloud medical appointment, registration, query inspection results, remote medical treatment, to avoid duplication of inspection and other services. Save a lot of time. Zhai (2012) pointed out for hospitals to improve their management level and efficiency, greatly simplify the work of IT deployment and operation and maintenance work, effective management of hardware resources, saving information costs [16]. For doctors to understand the patient's past through the system file system, more convenient to take medical measures to avoid many misdiagnosis and medical malpractice. For drug suppliers can be based on the hospital's drug monitoring, distribution, *etc.* For government departments can more convenient management and supervision.

According to the present situation analysis, we know that the construction of medical and health information system in most parts of the country is uneven, and can promote and promote the progress of the medical and health information system. At present, residents' health records information and medical information is scattered in various communities and hospitals, not to form a unified electronic health records of residents of EHR, while residents of their own health records information needs and medical institutions to improve the quality of medical care needs to be able to build a unified electronic health records of residents. And only through the construction of regional health information platform can be scattered in various medical and health institutions of the health records data through a unified standard summary of storage and sharing, so as to form a unified whole area of the electronic health records of residents, to better provide services for residents.

Through the hospital information system construction of a unified information system, on the regional medical and health institutions to conduct a comprehensive upgrade, integration, sharing and exchange for all medical and health institutions in the region information. Hasan (2013) pointed out establish a remote registration service system and a unified information platform treatment system so as to optimize the cartoon [17], treatment mode and treatment process, two-way referral between community medical institutions and hospitals and two-way linkage with the cooperative medical service mode, to guide residents to "small community, serious illness to the hospital"; at the same time can also realize the sharing of auxiliary examination results of medical institutions, but also can save medical expenses in convenient treatment at the same time. With the introduction of the new national health care reform program, in order to meet the needs of the reform of the medical and health system, it is also needed to strengthen the health information system by the regional health information platform. To achieve the goal of health service reform, to overcome the bottleneck in the development of medical and health services, we must use modern information technology to create a modern health services. To establish a modern health care system, we must establish a scientific and effective management method based on the regional health information platform, service process reengineering, resource integration, innovation management mechanism, the establishment of scientific and effective management tools, and to provide high quality and low cost full program health services, and to realize the integrated management of medical and health services.

3. Materials and Methods

3.1. Selection of Samples

We select 60 senile liver cirrhosis patients received by Chinese hospitals from July 2012 to June 2014 as samples for investigation and research, including 36 male patients and 24 female patients. The results in Table 1 show that: the age distribution is between

55 and 83 years old, averagely aged 66.61, with a standard deviation of 7.11, the T value selected by sample age in the group is 73.125, and the P value is 0.000<0.01; the weight distribution is between 42 and 75kg, averagely weighed 56.97kg, with a standard deviation of 8.26, the T value selected by sample weight in the group is 53.89, and the P value is 0.000<0.01; the length of stay distribution is between 7 and 112d, averagely hospitalized 47.72d, with a standard deviation of 28.09, the T value selected by sample length of stay in the group is 13.27, and the P value is 0.000<0.01; it can be seen that all the P values of samples in terms of age, weight and length of stay are <0.01, indicating that each sample has a certain representativeness and uniqueness, which brings research results authenticity and universality. Of which, the number of posthepatitic cirrhosis cases is the largest, 33 cases in total. Besides, there are also 10 biliary cirrhosis cases, 2 metabolic cirrhosis cases, and 15 alcoholic cirrhosis cases.

Table 1.Comparison of Age, Weight and Length of Stay Distribution in Samples (n=60)

Index	Average	Standard deviation	T value	P value
Age (years old)	66.61	7.11	73.125	0.000
Weight (kg)	56.97	8.26	53.89	0.000
Length of stay (d)	47.72	28.09	13.27	0.000

Table 2.Statistics of Distribution for Experts in Liver Cirrhosis Treatment (n=18)

Index		n	Distribution and recovery of questionnaire validity test forms			
			No. of distribution	No. of recovery	Recovery rate (%)	Effective recovery rate (%)
Expert structure	Chief physician	5	5	5	100	100
	Associate chief physician	10	12	10	83.33	100
	Other doctor physicians	3	4	3	75	100
Subtotal		18	21	18	85.71	100

3.2. Diagnostic Criteria

Liver cirrhosis diagnosis is based on the diagnostic criteria Viral Hepatitis Prevention and Treatment Program revised on Xi'an Meeting in 2000; while hospital infection is based on the Hospital Infection Diagnostic Criteria (Trial). When a patient is hospitalized, it is required to check and confirm that the patient is free of infection, nor in the incubation period. Provided a patient gets infected 48h after hospitalization, the case will be judged as a hospital infection.

3.3. Research Method

We review and analyze 60 patients' clinical data, including patients' age, weight, length of stay, blood, urine and stool routine inspection, plasma protein, liver function level, *etc.*

3.4. Questionnaire Treatment

We carry out questionnaire survey on 18 experts in liver cirrhosis treatment from Chinese 3A-class hospitals. The questionnaire adopts five-grade evaluation: 5 score for extremely large influence factors, 4 score for relatively large influence factors, 3 score for ordinary influence factors, 2 score for relatively small influence factors, and 1 score for small influence factors, the larger the influence, the higher the score. The results in Table 2 show that: 5 questionnaires are distributed to chief physicians, and 5 copies are recovered, with a recovery rate of 100% and an effective rate of 100%; 12 questionnaires are distributed to associate chief physicians, and 10 copies are recovered, with a recovery rate of 83.33% and an effective rate of 100%; 4 questionnaires are distributed to other doctor physicians, and 3 copies are recovered, with a recovery rate of 75% and an effective rate of 100%; in total 21 questionnaires are distributed, and 18 copies are recovered, with a recovery rate of 85.71% and an effective rate of 100%.

Validity test on questionnaires for experts: we adopt structure and content validity test method. The test results in Table 3 show that: 3 chief physicians think that the validity is very high, 1 thinks relatively high, and 1 thinks ordinary; 3 associate chief physicians think that the validity is very high, 2 think relatively high, and 1 thinks ordinary; 2 other doctor physicians think that the validity is very high, and 1 thinks relatively high. In total 12 experts think that the validity is very high, accounting for 66.67%; 4 think relatively high, accounting for 22.22%; 2 think ordinary, accounting for 11.11%. It can be observed that 18 experts reach consensus that the content and structure are effective and can simply and truly reflect the actual conditions of respondents, with very high test validity.

Reliability test on questionnaires for 18 experts: we adopt the "retest method" to redistribute questionnaires to some respondents for retest and definition of the stability coefficient at an interval of two weeks, of which 5 are distributed to experts. There is an interval of 14 days between the first and the second test, the correlation coefficient r acquired from the two tests is 0.95, and all P values are less than 0.01. The two tests are highly correlative, conforming to investigation requirements.

Table 3. Statistics of Validity Rest on Questionnaires for Experts in Liver Cirrhosis Treatment (n=18)

Index		n	Statistics of questionnaire validity test				
			Very high	Relatively high	Ordinary	Relatively low	Very low
Expert structure	Chief physician	5	3	1	1	0	0
	Associate chief physician	10	7	2	1	0	0
	Other doctor physicians	3	2	1	0	0	0
Subtotal		18	12	4	2	0	0
Percentage (%)		100	66.67	22.22	11.11	0	0

3.5. Statistical Treatment

We use SPSS19.0 statistical software for data analysis and processing. Measurement data are tested with t, while enumeration data are tested with $\chi 2$. Provided $P<0.05$, there will appear significant difference; provided $P<0.01$, there will appear very significant difference, all are statically significant to some extent.

4. Empirical analysis

4.1. Hospital Infection Incidence and Infection Types

Among 60 patients, the results in table 4 show that: there are 16 hospital infection cases in total, with an infection rate of 26.67%, of which there are 6 abdominal infection cases (accounting for 10%), 4 urinary system infection cases (accounting for 6.67%), 3 respiratory tract infection cases (accounting for 5%), 2 intestinal infection cases (accounting for 3.33%), and 1 skin infection case (accounting for 1.67%); infections in sequence by severity: abdominal infection, urinary system infection, respiratory tract infection, intestinal infection, skin infection.

Table 4. Hospital Infection Types of 60 Liver Cirrhosis Patients

Infection type	No. of infection cases (n)	Percentage (%)	Ranking
Abdominal infection	6	10	1
Urinary system infection	4	6.67	2
Respiratory tract infection	3	5	3
Intestinal infection	2	3.33	4
Skin infection	1	1.67	5
Total	16	26.67	

4.2. Pathogen Inspection Results

We carry out pathogen inspection. Among 16 infection patients, totally 14 pathogens are detected, with a detection rate of 87.5%. The results in Table 5 show that: there are 11 strains of gram positive bacteria (accounting for 68.75%), 7 strains of staphylococcus aureus (accounting for 43.75%), 5 strains of enterococcus faecalis (accounting for 31.75%), 2 strains of coagulase negative staphylococcus (accounting for 12.5%), 4 strains of gram negative bacteria (accounting for 25%), 3 strains of klebsiella pneumoniae (accounting for 18.75%), 2 strains of escherichia coli (accounting for 12.5%), and 1 strain of fungus (accounting for 6.25%); in sequence: gram positive bacteria, staphylococcus aureus, enterococcus faecalis, gram negative bacteria, klebsiella pneumonia, coagulase negative staphylococcus, escherichia coli, fungus.

Table 5. Distribution of Pathogens of 16 Liver Cirrhosis Concurrent Hospital Infection Patients

Pathogen	No. of strains (n)	Percentage (%)	Ranking
Gram positive bacteria	11	68.75	1
Staphylococcus aureus	7	43.75	2
Enterococcus faecalis	5	31.25	3
Coagulase negative staphylococcus	2	12.5	6
Gram negative bacteria	4	25	4
Klebsiella pneumoniae	3	18.75	5
Escherichia coli	2	12.5	6
Fungus	1	6.25	8

4.3. Factor Analysis

We sort data of senile liver cirrhosis patients and analyze factors related to concurrent hospital infections. The results in Table 6 show that: the hospital infection rate of patients $\geqslant$62 years old is 37.14% (13/35), higher than 12% (3/25) of patients <62 years old, the T value = 4.12, $P<0.05$, and the significant difference is statistically significant; the hospital infection rate of patients hospitalized >30d is 34.88% (15/43), higher than 5.88% (1/17) of patients hospitalized <30d, the T value = 8.67, $P<0.01$, and the extremely significant difference is statistically significant; the hospital infection rate of patients with albumin

<3.0g/dl is 43.33% (13/30), higher than 10% (3/30) of patients with albumin ⩾3.0g/dl, the T value = 4.86, P<0.05, and the significant difference is statistically significant; the hospital infection rate of patients taking aerobic exercise <1d is 33.33% (15/45), higher than 6.67% (1/15) of patients taking aerobic exercise ⩾1d, the T value = 5.86, P<0.01, and the extremely significant difference is statistically significant; the hospital infection rate of patients with invasive operation is 66.67% (8/12), higher than 16.67% (8/48) of patients without invasive operation, the T value = 6.12, P<0.01, and the extremely significant difference is statistically significant; the hospital infection rate of patients with complication is 64.71% (11/17), higher than 11.63% (5/43) of patients without complication, the T value = 12.34, P<0.01, and the extremely significant difference is statistically significant; the hospital infection rate of patients using antibiotics is 42.86% (15/35), higher than 4 (1/25) of patients not using antibiotics, the T value = 13.45, P<0.01, and the extremely significant difference is statistically significant.

Table 6. Factors Related to Liver Cirrhosis Patient Hospital Infections

Factor		Infection rate (%)	T value	P value
Age (years old)	≥62	37.14 (13/35)	4.12	<0.05
	<62	12 (3/25)		
Length of stay (d)	≥30	34.88 (15/43)	8.67	<0.01
	<30	5.88 (1/17)		
Albumin (g/dl)	<3.0	43.33 (13/30)	4.86	<0.05
	≥3.0	10 (3/30)		
Aerobic exercise (h/d)	<1	33.33 (15/45)	5.86	<0.01
	≥1	6.67 (1/15)		
Invasive operation	Yes	66.67 (8/12)	6.12	<0.01
	No	16.67 (8/48)		
Complication	Yes	64.71 (11/17)	12.34	<0.01
	No	11.63 (5/43)		
Antibiotics	Apply	42.86 (15/35)	13.45	<0.01
	Not apply	4 (1/25)		

4.4. Main Rehabilitation Factors

We carry out questionnaire survey on 18 experts in senile liver cirrhosis. The results in Table 7 show that: the average in age factor is 4.39, the standard deviation is 0.50, T=37.120, and P=0.000; the average in length of stay factor is 4.22, the standard deviation is 0.55, T=32.670, and P=0.000; the average in albumin factor is 3.94, the standard deviation is 0.64, T=26.184, and P=0.000; the average in aerobic exercise factor is 4.28, the standard deviation is 0.75, T=24.137, and P=0.000; the average in invasive operation factor is 3.67, the standard deviation is 0.49, T=32.070, and P=0.000; the average in complication factor is 4.17, the standard deviation is 0.92, T=19.141, and P=0.000; the average in antibiotic factor is 4.00, the standard deviation is 0.77, T=22.127, and P=0.000. It can be seen that all P values are 0.000, indicating that all experts' opinions in the group are extremely different and all experts have their own thoughts, and all averages are larger than 3, indicating that all influences are above ordinary level and influences will be larger if age factor, aerobic exercise factor, length of stay factor, complication factor and antibiotic factor are all >4. Influence factors in sequence from large to small: age factor, aerobic exercise factor, length of stay factor, complication factor, antibiotic factor, albumin factor, invasive operation factor.

Table 7.Factors Related to Liver Cirrhosis Patient Concurrent Hospital Infections

	Average	Standard	T value	P value	Ranking

		deviation			
Age factor	4.39	0.50	37.120	0.000	1
Length of stay factor	4.22	0.55	32.670	0.000	3
Albumin factor	3.94	0.64	26.184	0.000	6
Aerobic exercise factor	4.28	0.75	24.137	0.000	2
Invasive operation factor	3.67	0.49	32.070	0.000	7
Complication factor	4.17	0.92	19.141	0.000	4
Antibiotic factor	4.00	0.77	22.127	0.000	5

5. Conclusions

Livers of liver cirrhosis patients will show diffuse and fibrous lesions. Patients will suffer from low immunity and hypersplenism. The phagocytic capacity of Kupffer cells and the complement level will decrease, patients are prone to concurrent hospital infections. Meanwhile, the intestinal environment of liver cirrhosis patients will also change. There will appear dysbacteriosis inside the intestinal tract and abnormal reproduction of microorganisms. It will cause intestinal wall congestion, portal vein backflow obstruction, and bacteria accumulation inside the abdominal cavity. Besides, such patients' blood vessel structures inside and outside the liver will change, bacteria can intrude into blood easily and thus induce bacteremia. Therefore, the probability for liver cirrhosis patients to suffer from hospital infections is high, higher than patients with other diseases. The results of this paper show that: the infection rate for 80 patients is 21.3%, consistent with literature reports.

This paper researches factors related to liver cirrhosis hospital infections. It is found that hospital infections are correlated with patients' age, length of stay, albumin content, *etc*. The decline in the physical function of each senile patient is related to the decline in each organ function and low immunity. Together with various underlying diseases frequently encountered by many senile patients, the incidence of infections will increase. Hospitals feature a high visitor flow and a dense population. Patients and their relatives may bring various pathogens to the hospital environment, and thus lead to hospital air pollution. Therefore, the infection probability for patients hospitalized >20d is much higher. Albumin is an important substance, which can maintain body osmotic pressure and provide nutrition. Low albumin content is easy to cause edema and malnutrition and affect body immunity. Meanwhile, albumin content is positively correlated with liver function. Patients with low albumin often show severe liver damage and decline in liver detoxification/immunity. Therefore, patients with low albumin are prone to hospital infections. Furthermore, fitness exercise, invasive operation, complication and application of antibiotics are closely related hospital infections. Taking more than one hour of exercise a day can increase human body's resistance against virus infections. Abdominal puncture, indwelling drainage tube, endoscopy and the like may lead to vasospasm, mucosal avascular necrosis and skin mucosal damage, conducive to pathogen invasion and increase of infection probability. The application of antibiotics may prevent infections, but abuse of antibiotics is prohibited. Unreasonable use may cause in vivo flora disorder and increase pathogen resistance. If highly drug-resistant pathogens intrude into human body, patients may suffer from hospital infections. The results of this paper show that patients' infection types are dominated by abdominal and urinary system infections, and pathogens are dominated by gram positive bacteria, of which staphylococcus aureus is the most. It can be used as a reference to guide clinical treatment.

In summary, senile liver cirrhosis patients are prone to hospital infections, and gram positive bacteria are the main pathogen. There are numerous rehabilitation

factors related, including in sequence: age factor, aerobic exercise factor, length of stay factor, complication factor, antibiotic factor, albumin factor, invasive operation factors, *etc*. Clinical staff should implement etiological treatment and establish corresponding preventive measures to reduce the incidence of hospital infections.

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