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**Journal of Endocrinology Research**
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ARTICLE

# An Analysis of Clinical Characters of Inpatients with Infection in the Department of Endocrinology

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ARTICLE INFO

*Article history*
Received: 4 April 2019
Accepted: 17 April 2019
Published Online: 30 April 2019

*Keywords:*
Department of endocrinology
Infection
Inpatient
Clinical analysis

ABSTRACT

**Objective:** To analyze the clinical characters of 812 inpatients with infection in the Department of Endocrinology. **Methods:** Retrospective exhibition of these patients' clinical characters included undergoing diseases, infectious organs, history illness, blood glucose and glycosylated hemoglobin (HbA1C), biochemical indicators, pathogens training description and results, medical imagines, antibiotic utilization, length of stay and hospital costs, final diagnosis and situations. **Results:** Non-diabetic patients accounted for 176 (21.67%), who were the cases of untreated well hyperthyroidism, mainly suffered with respiratory tract infection. Diabetic patients accounted for 636 (78.33%). In the type2 diabetes patients 376 (59.12) suffered with urinary tract infection. 192 (30.19%) suffered with respiratory system infection, 124 (19.50%) were accompanied with diabetic foot infection, which had 74 (59.67%) patients with HbA1C>9.0%.Statistical comparisons showed that the days of antibiotic use and average length of stay in hospital per capita in patients with HbA1C≥8% were more than ones with HbA1C<8% in those with diabetic infections (P<0.01) . The days of antibiotic use per capita in patients with HbA1C>9% were more than ones with HbA1C<7% in those with diabetic foot infections (P<0.01). **Conclusion:** Endocrine diseases lack rigid and effective long-term control, which may result in the complications involved with urinary tract, respiratory tract and infections in other organs. The time of hospitalization per capita and the duration of antibiotic use rise are longer in diabetic patients with poor blood sugar control and diabetic foot infection.

## 1. Introduction

Patients with endocrinology have immune dysfunction. If chronic underlying diseases cannot be effectively monitored for a long time, infectious diseases of different systems will continue to occur. The pathogenesis, age, average length of hospital stays, and per capita cost of patients with endocrine diseases who are susceptible to infection, pathogens, and the most common endocrine diabetic population are summarized and compared with diabetes management to attract clinicians' attention. The clinical features of infection in different populations were recognized. This not only provides a possible reference for the early prevention and treatment of infectious diseases, but also helps to strengthen the education of patients, improve

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 DOI: https://doi.org/10.30564/jer.v1i1.729

the quality of life of patients, shorten the length of hospitalization and reduce the cost of treatment.

## 2. Objects and Methods

### 2.1 Research Object

Clinical analysis was conducted on 812 patients admitted to the Department of Endocrinology of the Second People's Hospital of Yunnan Province with concurrent infection from March 2015 to March 2018.There were 341 males and 471 females. The age is 12 ~ 86 years old, with an average of (59.16±10.21) years old. The course of the underlying disease ranged from 10 d ~ 33 a with an average of (104.97 ± 85.44) months.

### 2.2 Research Method

The clinical data of each patient was entered into the Excel table, including general demographic data, underlying disease course, concomitant disease, time of infection, site of infection, past medical history, diabetes type of diabetes, and management of blood glucose, admission of glycated hemoglobin HbA1C, biochemical metabolic indicators, pathogen culture name and results, ultrasound or X-ray or CT or MRI imaging data, antibiotic use, length of hospital stay, hospitalization expenses, discharge diagnosis, etc. Further statistical analysis was performed.

### 2.3 Statistical Treatment

SPSS statistical software was used to process the data. The enumeration data are expressed in constituent ratio. Measurement data are expressed as mean ± standard deviation (±s).Independent sample t test was used for intragroup comparison. One-way ANOVA was used for comparison between groups.P <0.05 was considered statistically significant.

## 3. Results

### 3.1 Major Diseases and Associated Infection Sites

Among the 812 infected patients, 176 were non-diabetic patients with concurrent infection. There were 75 males and 101 females. These are mainly endocrine diseases such as hyperthyroidism and methylene inflammation. The main infection sites are shown in Table 1.The number of patients with concomitant diabetes was 636.There were 266 males and 370 females. The age was(60.08 ± 13.61) years old. The course of diabetes is (102.54 ± 86.14) months. The main infection sites are shown in Table 2.

**Table 1.** Major diseases and associated infection sites in non-diabetic patients with concurrent infection

| Disease and associated infection site | *n* | Composition ratio (%) |
|---|---|---|
| Hyperthyroidism | | |
| Complicated with upper respiratory tract infection | 39 | 22.16 |
| Severe pulmonary infection secondary to agranulocytosis | 26 | 14.77 |
| Urinary tract infection | 12 | 6.82 |
| Complicated with digestive tract infection | 11 | 6.25 |
| Methylene inflammation with respiratory infection | 38 | 21.59 |
| Thyroid-associated ophthalmopathy with respiratory or urinary tract infections | 18 | 10.23 |
| Thyroid nodules with respiratory or urinary tract infections | 9 | 5.11 |
| Hypothyroidism with respiratory tract infection | 8 | 4.55 |
| Gouty arthritis with skin infection | 6 | 3.41 |
| Climacteric syndrome with respiratory or urinary tract infections | 4 | 2.27 |
| Cushing's syndrome with pneumonia | 2 | 1.14 |
| Pituitary crisis with pneumonia | 1 | 0.57 |
| Sheehan syndromewith bronchitis | 1 | 0.57 |
| Primary aldosteronism with upper respiratory tract infection | 1 | 0.57 |

**Table2.** The main site of infection in diabetic patients with infection

| Disease and associated infection site | *n* | Composition ratio (%) |
|---|---|---|
| Type 1 diabetes (n=22) | | |
| Male | 6 | |
| Female | 16 | |
| Combined respiratory infection (n=18) | | 2.83 |
| Male | 8 | |
| Female | 10 | |
| Combined urinary tract infection (n=10) | | 1.57 |
| Male | 4 | |
| Female | 6 | |
| Combined acute enteritis (n=2) | | 0.31 |
| Female | 2 | |
| Hidden autoimmune diabetes in adults (n = 4) | | |
| Male | 3 | |
| Female | 1 | |



DOI: https://doi.org/10.30564/jer.v1i1.729

| | | |
|---|---|---|
| **Combined ketosis and respiratory infection (n=4)** | 4 | 0.63 |
| **Male** | 3 | |
| **Female** | 1 | |
| **Type 2 diabetes (n=610)** | | |
| **Male** | 257 | |
| **Female** | 353 | |
| **Combined urinary tract infection (n=376)** | | 59.12 |
| **Male** | 149 | |
| **Female** | 227 | |
| **Combined respiratory infection (n=192)** | | 30.19 |
| **Male** | 106 | |
| **Female** | 86 | |
| **Combined digestive system infection (n=37)** | | 5.82 |
| **Male** | 26 | |
| **Female** | 11 | |
| **Inflammation associated with oral and maxillofacial space infection (n=7)** | | 1.10 |
| **Male** | 5 | |
| **Female** | 2 | |
| **Combined orbital and intraocular inflammation (n = 5)** | | 0.79 |
| **Male** | 2 | |
| **Female** | 3 | |
| **Diabetic foot infection (n = 124)** | | 19.50 |
| **Male** | 83 | |
| **Female** | 41 | |

## 3.2 Diabetes Mellitus Patients with Multiple Systemic Infections, Repeated Hospitalizations with Infections and Nosocomial Infections

### 3.2.1 Patients with multiple systemic infections

A total of 51 patients were infected with two or more systemic infections. Among them, 8 cases (4.55%) were nonglycosuria, and 43 cases (6.76%) were diabetes.

### 3.2.2 Recurrent Hospitalization of Diabetic Patients with Infection

A total of 44 patients (7.21%) with type 2 diabetes mellitus were hospitalized repeatedly within 3 years. Among them, 17 cases (38.64%) were diabetic foot complicated with infection. The patients with diabetes who were repeatedly hospitalized for 3 times or more with concurrent infection were 7 cases (15.91%).3 cases (13.64%) with type 1 diabetes mellitus were hospitalized repeatedly within 3 a.

### 3.2.3 Nosocomial Infection

In 3a, 121 cases (14.90%) had nosocomial infection. 5 cases (0.62%) were non-diabetic. Among them, 3 cases were secondary respiratory tract infection caused by hyperthyroidism, and 2 cases were urinary tract infection.116 cases (14.29%) were diabetes. This included 54 cases of upper respiratory tract infection (46.55%), 37 cases of painless urinary tract infection (31.90%), 7 cases of gastrointestinal tract infection, and 18 cases of secondary intestinal, oral or urinary tract infection (15.52%) after antibiotics.

## 3.3 Pathogenic Test Results and Selection of Antibiotics

### 3.3.1 Etiology Test Results

In accordance with the principles of antibiotic use, patients admitted to the hospital with infectious symptoms, signs or examination data suggest that the infected person should be examined for relevant etiology before using antibiotics, such as swabs of pharynx or culture of sputum, urine, feces, blood and broken secretions. The inspection rate of the specimen is 100%. A total of 304 cases (37.44%) of the pathogenic bacteria were cultivated in infected patients. The main results of the pathogenic bacteria cultured in different specimens were as shown in Table 3.

**Table 3.** The main results of the pathogenic bacteria cultured in different specimens (n)

| Main pathogen name | Urine | Foot secretion | Sputum and throat swab | Blood | Foreskin secretion | Maxillofacial space exudate | Eye secretions |
|---|---|---|---|---|---|---|---|
| **Escherichia coli** | 117 | 12 | 4 | 14 | 1 | | |
| **Klebsiella pneumoniae** | 11 | 8 | 24 | 6 | | | |
| **Staphylococcus aureus** | | 22 | | | | 2 | |
| **Proteus mirabilis** | | 7 | | | | | |
| **Enterobacter cloacae** | | 6 | | | | | |
| **Acinetobacter baumannii** | | 6 | 4 | 4 | | | |
| **Streptococcus pneumoniae** | | | | | | | |
| **Salmonella** | | | | | | | |
| **Streptococcus agalactiae** | | | | | | | 1 |

 DOI: https://doi.org/10.30564/jer.v1i1.729

### 3.3.2 Developed Resistant Bacteria

A total of 95 resistant bacteria were cultured, accounting for 31.25% of the pathogenic bacteria. Among them, 53 cases of drug-resistant bacteria were cultured in urine, accounting for 17.43% of the pathogenic bacteria. There were 49 cases of multi-drug resistant bacteria, including 44 cases of escherichia coli, 4 cases of klebsiella pneumoniae, 1 case of proteus singularity, and 4 cases of pandrug-resistant escherichia coli. Twenty cases of multiple drug-resistant bacteria were cultured from foot secretions, including 14 cases of escherichia coli, 3 cases of klebsiella pneumoniae, 2 cases of staphylococcus aureus, 1 case of streptococcus haemolyticus, and 4 cases of pandrug-resistant bacteria, all of which were acinetobacter baumannii.6 cases of multi-drug resistant bacteria were cultured from sputum and pharyngeal swabs, including 3 cases of escherichia coli, 3 cases of klebsiella pneumoniae and 5 cases of pandrug-resistant bacteria, all of which were acinetobacter baumannii.Three cases of escherichia coli with multiple drug resistance were cultured in blood. 4 cases of pandrug-resistant bacteria included 2 cases of mrsa and 2 cases of acinetobacter baumannii.

### 3.3.3 Selection of Antibiotics

Antibiotics are mainly selected or replaced based on the results of drug susceptibility testing. However, some patients have been taking oral antibiotics for a long time before admission, or injecting antibiotics at local clinics, and they are unable to produce pathogenic bacteria. Therefore, the antibiotics can only be selected empirically according to the clinical judgment of community-acquired infection or nosocomial infection to observe the clinical efficacy. Infection indicators such as blood routine, urine routine, procalcitonin, chest radiographs or CT and other imaging data were monitored and adjusted in time, and the drugs were administered according to the grading management system of antimicrobial drugs in the hospital as far as possible. The frequency of antibiotics from high to low was pentahydrate cefazoline, cefmenoxime, cefdiazine, ceftian, levofloxacin, metronidazole, tinidazole, penicillin, azithromycin, piperacillin, tazobactam, cefoperazone/sulbactam, meropenem, imipenem and vancomycin, respectively.The comparison between glycated hemoglobin and age, duration of disease, days of antibiotic use, length of hospital stay, and cost in patients with diabetes mellitus and diabetic foot infection are shown in Tables 4 and 5.

**Table 4.** The comparison of age, course of disease, days of antibiotic use, length of hospital stay and costs between diabetic patients with infections with HbA1C<8% and those with HbA1C≥8%

| Item | HbA1C<8% | HbA1C≥8% | *t* | *P* |
|---|---|---|---|---|
| Age | 61.13±15.05 | 59.68±13.01 | 1.156 | 0.249 |
| Duration of diabetes(month) | 93.84±82.93 | 106.18±87.10 | -1.686 | 0.092 |
| Per capita days of antibiotic use (d) | 1.53±3.79 | 10±4.53 | -3.424 | 0.001 |
| Per capita hospitalization days (d) | 11.17±3.67 | 12.49±4.51 | -3.461 | 0.001 |
| Per capita hospitalization expenses (RMB) | 12 647.77±7 847.64 | 14 324.14±6 312.31 | -2.801 | 0.005 |

**Table 5.** The comparison of age, course of disease, days of antibiotic use, length of hospital stay and costs between diabetic patients with infections with HbA1C<7%, ones with HbA1C from 7% to 9% and those withHbA1C> 9%

| Item | HbA1C<7% | HbA1C 7%~9% | HbA1C> 9% | F | P |
|---|---|---|---|---|---|
| Age | 66.24±15.41 | 61.76±11.55 | 61.03±11.19 | 1.021 | 0.363 |
| Duration of diabetes(month) | 111±85.03 | 119.97±87.53 | 111.26±84.33 | 0.139 | 0.0871 |
| Per capita days of antibiotic use (d) | 7.18±3.22 | 11.5±4.59 | 12.95±4.90 | 9.063 | 0.000 |
| Per capita hospitalization days (d) | 9.58±2.35 | 13.82±6.89 | 13.70±5.30 | 2.937 | 0.057 |
| Per capita hospitalization expenses (RMB) | 12211.77± 2920.27 | 18792.98± 10795.06 | 18163.94± 7685.47 | 2.928 | 0.057 |

## 4. Discussion

Among the 812 patients with coinfection in the Department of Endocrinology of The Second People's Hospital of Yunnan Province from March 2015 to March 2018, the basic diseases of coinfection were mainly common endocrine diseases.176 cases (21.67%) were non-diabetic, and the number of females is more than males. Patients with hyperthyroidism are often in a state of high metabolism and are prone to malnutrition. In particular, hyperthyroidism was not treated or controlled in time, and autoimmune disorders were associated



DOI: https://doi.org/10.30564/jer.v1i1.729

with increased risk of various infections and severe infections. However, at present, insufficient attention has been paid to various infections in patients with hyperthyroidism, and relevant research reports are lacking[1]. In this study, 88 cases of hyperthyroidism were associated with infection, including 39 cases (22.16%) with upper respiratory tract infection and 26 cases (14.77%) with severe granulocytosis. In addition, endocrine disorders with autoimmune disorders were also prone to co-infection, such as subthyroiditis combined with respiratory tract infection in 38 cases (21.59%). Other thyroid related diseases, climacteric syndrome, gout, adrenal and pituitary diseases are also associated with different organ infections. If patients with diabetes do not timely control sugar, long-term high blood sugar will cause serious damage to the function of the body's white blood cells and reduce the immunity of various body organs, which is conducive to the invasion and reproduction of bacteria. In particular, patients with poor glycemic control are associated with stress-induced ketosis or acidosis, which leads to increased difficulty in controlling infection during treatment, and the patient's condition may worsen or even severe infection [2]. In this study, 636 patients (78.33%) with diabetes were older and had a longer course of diabetes. The number of females is more than males.

The prevalence of diabetes mellitus associated with urinary tract infection in women is high, which is related to the structure of the female urinary tract. The amount of estrogen secretion in menopausal women is significantly reduced, the urethra is prone to atrophy, and the vaginal flora is dysregulated. In patients with poor long-term glycemic control, the ability of white blood cells, mononuclear cells, megakaryocyte chemotaxis and phagocytosis are all affected, which increases the incidence and extent of infection. It is often manifested as urinary tract infection or acute pyelonephritis [3-4].In the study of type 2 diabetes, 458 patients (72.01%) were HbA1C > 8.0%.There were 376 cases of urinary tract infections, which accounted for 59.12%. Similarly, the incidence of women is higher than that of men (149 males and 227 females).Hyperglycemia can result in hypertrophy of basement membrane of capillaries in lung tissue and prolonged diffusion distance of blood oxygen. As the pulmonary capillary bed becomes less, the pulmonary surfactant decreases, the glycosylated protein increases, and oxygen dissociation is difficult. Moreover, the ventilatory/blood flow ratio imbalance and oxygen carrying capacity are significantly reduced, which leads to tissue hypoxia and is more prone to pulmonary infection [5].In the 22 cases of type 1 diabetes in the study (6 males and 16 females), the most common ones were respiratory tract infection (n = 18) and urinary tract infection (n = 10).Ketosis and respiratory tract infection occurred in all 4 cases (3 males and 1 female) of occult autoimmune diabetes mellitus in adults.192 cases of type 2 diabetes mellitus (30.19%) were accompanied by respiratory tract infection, and the number of males is more than females (106 males and 86 females).Age is also a risk factor for diabetic foot, and the incidence increases with age [6]. Foreign studies [7] suggest that the incidence of diabetic foot in men is higher than that in women. Because men work a lot, it is more likely to cause changes in foot pressure or secondary infections. Among the patients with diabetes mellitus, 124 (19.50%) were diabetic foot infections, and the number of males is more than females (83 males and 41 females).The older, the longer the course of diabetes.HbA1C> 9% of patients were 74 cases (59.67%), and HbA1C< 7% was 12 cases (9.68%).

Diabetic patients have abnormal metabolism of glucose, lipid and protein, and are often associated with hypoproteinemia, which increases the risk, frequency and degree of infection and mortality of multiple organ infections [8].Among the patients with multiple systemic infections in this study, 8 (4.55%) were non-diabetic, and 43 (6.76%) were diabetic. A total of 44 patients with type 2 diabetes who were repeatedly hospitalized with infection in 3a were mostly associated with hypertension, dyslipidemia, diabetic neuropathy and vascular disease, nephropathy, eye disease and hypoproteinemia. Among them, diabetic foot infection accounted for 38.64%; diabetes patients with repeated hospitalization ≥3 times or more had 15.91%.4 cases were diabetic foot infection. The four cases were examined at HbA1C 8.0% to 12.5%. One female patient was 65 years old and had a diabetes course of 13 a. The male patients were aged 45, 59 and 66 years old, and the duration of diabetes was 7, 10, 20 a, respectively. Diabetes mellitus is often complicated with neurogenic bladder and urinary retention, which leads to recurrent urinary tract infection in patients with diabetes mellitus. In this study, 3 patients with type 1 diabetes were repeatedly hospitalized and infected.1 case was a 16-year-old male, whose course of diabetes was 11a. He was complicated with cataract in both eyes, diabetic neuropathy, recurrent urinary tract infection secondary renal insufficiency and urinary retention. The patient was admitted to the urology department for cystostomy with continuous indwelling catheter for 4 times within 3 a and left the hospital.

In the hospital, 121 patients (14.90%) were infect-

 DOI: https://doi.org/10.30564/jer.v1i1.729

ed with nosocomial infections: non-diabetic patients were mainly secondary respiratory infection caused by hyperthyroidism. The main causes of diabetes were painless urinary tract infection (31.90%), secondary intestinal, oral mucosa or urinary tract infection (15.52%), and upper respiratory tract infection (46.55%).The results were similar to those reported in diabetic patients with nosocomial infections [9].

Urinary tract infections are mainly Gram-negative bacterial infections, which are mainly Escherichia coli. Adhesion of the bacteria is an important cause of retrograde infection. When the immunity of diabetes declines, endogenous infection will occur in the body, and drug sensitivity test shows that escherichia coli has high drug resistance. In this study, 151 cases of pathogenic bacteria were cultured in urine, of which 117 cases were mainlyEscherichia coli. A total of 53 resistant bacteria were cultured in urine, accounting for 17.43% of pathogenic bacteria, and 49 cases were multi-drug resistant bacteria, which were still mainly Escherichia coli. Diabetic patients are often associated with asymptomatic bacteriuria. Whether early drug intervention is needed is still controversial [10].In view of the increase of multiple drug-resistant bacteria infections, it is necessary to regularly monitor and timely analyze the drug resistance, rationally select antibiotics, and effectively prevent and control the emergence of drug-resistant bacteria. There are many kinds of pathogenic microorganisms in patients with diabetic foot infection. They are mainly drug-resistant bacterial infections or mixed bacterial infections, and it is difficult to treat diabetic foot infection clinically [11].In this study, 77 cases of pathogenic bacteria were cultured in the foot secretions, which were mainly Staphylococcus aureus. Among them, there were 24 cases resistant bacteria and 20 cases multi-drug resistant bacteria, which were mainly Escherichia coli.Klebsiella pneumoniae, one of the important opportunistic pathogens, is usually colonized in the respiratory tract and intestinal tract of normal people.It is usuallyhospital-acquired infection. The increased risk of infection is associated with low patient immunity, such as diabetes, malignant tumors, renal failure, glucocorticoids, radiotherapy and chemotherapy, etc. [12].With the large-scale application of lactam antibiotics, especially the third-generation cephalosporins, extended-spectrum lactam-resistant bacteria have also been induced [13].In this study, 44 cases of pathogenic bacteria were cultured in throat swabs, which were mainly 24 cases of Klebsiella pneumoniae. There were 6 cases of multi-drug resistant bacteria, including 3 cases of Escherichia coli and 3 cases of Klebsiella pneumoniae. 5 cases of pan-resistant bacteria were Acinetobacter baumannii.

For the general diabetic population, the control target HbA1C < 7% is required[14].Diabetic patients with long course of disease and older age often have more complications and fail to reach the standard. By referring to domestic and foreign literatures, it can be appropriately adjusted to 8.0% ~ 8.5% [15].According to the latest Chinese guidelines, HbA1C < 8% may be more suitable for patients with significant vascular complications or severe comorbidities with a shorter life expectancy [14].Therefore, in this study, HbA1C < 8% and ≥ 8% were used to compare the difference between the number of days of per capita antibiotic use, the length of hospital stays, and the per capita hospitalization cost.The results showed that the number of days of antibiotic use per person and the number of days of hospitalization per capita were significantly higher in patients with HbA1C≥8% diabetes infection than those with HbA1C<8% ($P < 0.01$).This indicates that patients with poor glycemic control have a long period of antibiotic use during hospitalization and prolonged per capita hospitalization. For diabetic foot patients, strictly speaking, when HbA1C < 7%, the incidence of foot ulcers and infections can be reduced, and the risk of amputation can be reduced [16].American scholars suggest that if the quality of life is poor and the expected survival period is short, the control target can be adjusted to HbA1C < 9% [15].Therefore, in this study, HbA1C < 7%, HbA1C7% ~ 9% and HbA1C> 9% were selected to divide the combined infection of 3a diabetic foot. The statistical results showed that the number of days of antibiotic use per capita was significantly higher in HbA1C>9% diabetic foot infection patients than in HbA1C <7% ($P < 0.01$).This indicates that patients with poor glycemic control of diabetic foot complicated with infection spend a long time in hospital on antibiotics.

Medicine is a multidisciplinary knowledge group, as is the endocrinology profession. In particular, diabetes, which can be associated with multiple systemic diseases, requires specialized cooperation in addition to specialized treatments. Among the study cases, 6 cases were successfully transferred to the laminar flow ward of the hematology department due to the aggravation of respiratory tract infection secondary to hyperthyroidism combined with granulocyte deficiency. Nine patients were transferred to ICU for treatment of diabetes complicated with severe respiratory failure or heart failure and unstable vital signs. Two cases died of ineffective rescue. After diabetes was admitted to hos-



DOI: https://doi.org/10.30564/jer.v1i1.729

pital, 4 patients were diagnosed with tuberculosis, and the symptoms of tuberculosis poisoning were obvious. They were transferred to the provincial center for disease control and prevention for treatment. There were 5 cases of diabetic foot infection secondary to sepsis, the condition was extremely critical. They were transferred to ICU for treatment, and 2 cases died of ineffective rescue.3 cases were treated with osteomyelitis and 3 cases were treated with vascular occlusion and vascular surgery. Three patients with diabetes mellitus with persistent high fever were referred to hepatobiliary surgery for diagnosis and treatment after hepatic abscess combined with imaging. Two patients with diabetes mellitus complicated with endophthalmitis and infection of periorbital space were transferred to ophthalmology. Two patients with diabetes complicated with oral and maxillofacial space infection were transferred to maxillofacial surgery. The remaining patients were all in the endocrinology department of the Second People's Hospital of Yunnan Province, and if necessary, they were timely invited to consult relevant departments such as respiratory, urinary, digestive, renal, blood, pharmaceutical and nutrition departments to adjust the diagnosis and treatment plan. Eventually, when the disease is relatively stable, the patient can leave the hospital.

In the face of the long-term and comprehensive and effective management needs of many chronic diseases, such as endocrine system diseases, primary hospitals or grade hospitals should do their best to supervise basic diseases as early as possible, so as to reduce the occurrence and progress of associated diseases, such as infectious diseases. Patients with infections that may have been induced or have been associated are identified and early standardized examination is performed. Rational drug selection and multidisciplinary cooperative treatment may shorten the hospitalization period and reduce the cost of treatment, which is conducive to improving the quality of life of patients.

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