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Report of 246 patients in department of infection during novel coronavirus infection epidemic

Abstract

Objective: Analyze disease types and infection status of patients about novel coronavirus pneumonia during epidemic of novel coronavirus infection in 24-hour outpatient of infectious disease in a general hospital in Shenzhen.

Methods: Patients were examined by blood routine, influenza A and B virus antigen assay (nasopharyngeal swab), real-time fluorescence RT-PCR detection of novel coronavirus nucleic acid (blood, nasopharyngeal swab), chest X-ray and chest CT.

Results: From January 24, 2020 to February 6, 2020, a total of 246 patients visited hospital in 12 days. Among the 222 adult patients, 214 (15 revisited) were young and the middle-aged young (18～64 years old), and 80.84% were from non-Guangdong province. There were 5 cases of infection A, 2 cases of infection B and 4 cases of new coronavirus infection. There were 8 elderly patients (≥ 65 years old), 62.5% of whom were from Hubei province. There were 0 cases of infection A, 0 cases of infection B and 2 cases of new coronavirus infection. The positivity of new coronavirus nucleic acid in 222 patients was 2.70% (6/222), among which 4 were from Hubei province and 2 had positive epidemiological history. A total of 5.86% (13/222) cases of acute respiratory infectious diseases (influenza A, influenza B and new coronavirus infection) were not medical personnel.

24 child patients visited hospital (1 patient visited twice), 50% of children were from Guangdong province, and 50% of the children were from outside Guangdong province. We determined 16 cases of influenza A and B virus antigen, and screened 1 case of influenza A and 0 cases of influenza B. Fourteen cases of novel coronavirus nucleic acid were detected, and 0 case of novel coronavirus infection was screened.

Conclusion: 2.70% of the adult patients with novel coronavirus infection in the department of infection in a general hospital in Shenzhen, a migrant city, were from outside Guangdong province. No novel coronavirus infection was detected in pediatric patients in our hospital.

Keywords: novel coronavirus pneumonia, spectrum of disease, infectious disease

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Part one: preface

In December 2019, a patient with novel coronavirus pneumonia was found for the first time in Wuhan, Hubei province. As an acute respiratory infectious disease, this disease had been included in the class B infectious disease stipulated in the law of 《the People's Republic of China on the prevention and treatment of infectious diseases》, and was managed asclass A infectious disease. The epidemiological characteristics of Novel Coronavirus Pneumonia are as follows: 1. Source of infection: mainly patients infected with novel coronavirus. Asymptomatic infected people can also be a source of infection. 2. Transmission route:main route of transmission is by respiratory droplets and close contact. Under the condition of exposure to high concentration of aerosol for a long time in relatively closed environment, it is possible to spread by aerosol. 3. Susceptible people: people are generally susceptible. Based on the current epidemiological investigation, the incubation period is 1-14 days, most of which are 3-7 days. Fever, dry cough and fatigue were main manifestations, and a few patients had diarrhea and other symptoms. The mild patients only showed low fever, fatigue and no pneumonia. In severe cases, dyspnea and/or hypoxemia occur more than a week after onset. Critical patients can rapidly progress to acute respiratory distress syndrome, septic shock, refractory metabolic acidosis, coagulation dysfunction, multi-organ failure and death. The novel coronavirus (COVID-19) is genus β coronavirus, having an envelope, round or elliptic particle, and a diameter of 60-140nm. The novel coronavirus nucleic acid can be detected inpatient's nasopharyngeal swabs, sputum and lower respiratory tract secretions, blood, feces, etc. The chest imaging of patient showed that there were multiple small plaques and stromal changes in the early stage of the disease, and the lung extraneous zone was obvious. Then development of double lung multiple ground glass shadow, infiltrating shadow, lung consolidation may occur in severe case. Confirmed case need have one of the etiological evidences, 1. Detection of positive nucleic acid of novel coronavirus by real-time fluorescence RT-PCR; 2. Virus gene sequencing, and highly homologous with known novel coronavirus. The autopsy and pathological findings of the first case of novel coronavirus pneumonia in 2020 showed that patient had pulmonary edema, hyaline membrane formation in lung, and inflammatory cells in myocardium, suggesting that patient had acute respiratory distress syndrome (ARDS) before death.[1] From December 2019 to early February 2020, national health commission counted 74,677 confirmed cases, 11,864 severe cases and 2,121 deaths.[2] Judging from incidence order of some clustered cases, the characteristics of human-to-human transmission are obvious. Medical staff also had infections in hospital, Zhang et al counted 1,688 cases of medical staff confirmed new coronavirus pneumonia up to February 11, 2020, which were concentrated in Wuhan (64%) and other parts of Hubei province (23.3%).[3]In the epidemiological analysis of novel coronavirus pneumonia by Zhang et al., among

86.6% confirmed cases, patients were aged 30～79 years old, the cases in Hubei province accounted for 74.7%, and 85.8% cases had exposure history to Wuhan. Among 44,672 confirmed cases, 1,023 cases died, with a crude fatality rate of 2.3%.[3]

On February 5, 2020, two cases of neonatal novel coronavirus pneumonia were confirmed in Wuhan children's hospital, the youngest of which was born 30 hours. Beijing daily reported that a total of 191 children were admitted to infectious diseases department of Beijing children's hospital, including 1 confirmed case of novel coronavirus infection (4-year old girl on January 25, cured and discharged on February 11), and 26 suspected cases of novel coronavirus infection on February 29, 2020.So far, there have been no reported deaths of children from pneumonia caused by novel coronavirus.

Shenzhen is a new immigrant city in south China, with a total population of 13.02 million in 2020. The registered population of Shenzhen is 5.5 million (42.24%), The inflow of foreign population is large, accounting for 57.76%. More than 400 cases were confirmed and 2 deaths in Shenzhen at present. The preliminary statistics showed that the juvenile population of Shenzhen is 1.8 million, accounting for 13.82%. Our comprehensive hospital is located in Nanshan district, the novel coronavirus infection is different from that of non-immigrant cities. We studied clinical data, we set up 24 hours of outpatient of infectious disease on January 24,2020. We analyzed patient's age, household registration and settlement data, whether there was an epidemiological history, the type of disease, whether need observation (inspection and imaging support), determined clinical suspected cases. After reporting nucleic acid detection result, we decided next treatment mode (drug treatment follow-up or hospitalization) and isolation measures (home isolation and general hospital detention or hospitalization isolation, or transfer to a special hospital for infectious diseases). We elucidate the spectrum of diseases in outpatient of infectious disease. We hope to provide a basis and reference for prevention and control of novel coronavirus infection in immigrant cities like Shenzhen. It also contributes to the prevention, treatment and management of other infectious diseases in immigrant cities.

Part two: research methods

Subjects of this study were child patients who visited 24-hour outpatient of infectious diseases in our hospital.Follow hospital procedures for screening patients with novel coronavirus pneumonia (including specific isolation guidelines). We collected and analyzed the medical records of outpatient in department of infection, recorded the changes of respiratory and digestive symptoms, and give standardized laboratory examination items (novel coronavirus nucleic acid testing). Include:

Record the general conditions of child patients in 24-hour outpatient of infectious diseases in 2020 (from January 24 to February 6). The total working time was 12 days or 288 hours. Observation indicators: asking for and recording the epidemiological history in detail, indicating which situation in epidemiological history and diagnosis and treatment situation; Age, sex, time of onset and inducement, prehospital symptoms and signs, etc; Blood routine and c-reactive protein (CRP); imaging data (chest X-ray, chest CT, etc.); detection influenza A and B virus antigen (nasopharyngeal swab), real-time fluorescence RT-PCR detection of new coronavirus nucleic acid (blood, nasopharyngeal swab).

(2) When necessary, the patients' fecal routine, arterial blood gas analysis, biochemical indicators (liver enzymes, cardiac enzymes, kidney function, etc.), coagulation function: activated partial thrombin time (APTT), plasma prothrombin time (PT), plasma fibrinogen (Fbg), D-dimer, urine routine, cytokine, lung function measurement, etc. were detected.

Statistical analysis: statistical tools in Microsoft Excel were used to complete statistical analysis. The normal measurement data was expressed as $\bar{x}\pm s$ mean.

Results

Our hospital is an 800-bed general hospital in Shenzhen. From 14:00 on January 24, 2020 to 14:00 on February 6, 2020, A total of 222 adult patients visited 24-hours outpatient of department of infection in 12 days. Among the 222 patients, 214 (15 patients) were young adults (18～64 years old), including 5 cases of infection A, 2 cases of infection B and 4 cases of new coronavirus infection. There were 8 patients aged 65 or above, including 0 cases of influenza A, 0 cases of influenza B and 2 cases of new coronavirus infection. The report is as follows (Table 1A):

From 14:00 on January 24, 2020 to 14:00 on February 6, 2020. The number of children admitted to our hospital in 12 days was 24, and among the 24 patients, 1 patient visited twice. Among them, 1 case of influenza A, 0 case of influenza B and 0 case of novel coronavirus infection were diagnosed, and the report is as follows (Table 1B):

In 12 working days, 214 young adults visited the outpatient of department of infection, aged from 19 to 64 years old, with an average age of 34.1±9.22 years old. Males accounted for 50.93% (109/214) and females 49.07% (105/214). Positive epidemiological history in Wuhan or another city in Hubei province accounted for 31.78% (68/214). We collected 214 young and middle-aged patients' household registration places (according to their ID CARDS), influenza detection and nucleic acid detection, etc. The report is as follows (see Table 2A–4A). Among 214 patients, 1.87% (4/214) as hospital staff were found to be negative by nucleic acid test of new coronavirus.

Meanwhile, We treated 24 pediatric patients, and the age of the children was mainly divided into 7 stages: fetal stage, neonatal stage, infant stage (0~<1 year old), infant stage (1~<3 years old), pre-school age (3~<6 years old), school age (6~<12 years old) and adolescence (12~18 years old). We analyzed household registration location, the proportion and positive ratio of influenza test, the proportion and positive ratio of novel coronavirus nucleic acid test. Our patients are between 1 year old and 3 months old to 17 years old. 5 children ininfant stage; 1 child in pre-school age; 5 children in school age; 13 children in adolescence. Among 24 patients, 11 were males (45.83%) and 13 were females (54.17%). Among them, 15 patients (62.5%) had a suspicious epidemiological history in Wuhan or other cities of Hubei province. The household registration location (according to ID card) of 24 children patients treated in outpatient of infectious disease were as follows (Table 2B).

The results of blood routine examination of 24 pediatric patients in outpatient of infectious diseases were as follows (Table 3B).

We calculated the results of influenza testing and nucleic acid testing of novel coronavirus in 24 pediatric patients treated in outpatient of infectious diseases (Table 4B).

We counted the imaging examinations of 214 young and middle-

aged patients in the outpatient of infectious diseases. The number of patients with normal chest X-ray was 152, and the number of patients with lesions was 15□Three patients received two X-ray films, two of which were normal, one of which was normal for the first time and abnormal for the second time□. Chest radiographs were not performed in 48 patients.There were 18 patients with normal chest CT, 14 patients with lesions, and 182 patients without chest CT examination (Table 5A). We present the imaging data of a patient who tested positive for the nucleic acid of new coronavirus (Figure 1–3).

Table 1 A Age stratification and number of infectious diseases of 222 patients

Age	Number of patients (N)	Medical cases (N)	Number of infectious diseases (N)
Young adults (18～64 years old)	214	229	5 cases of infection A
			2 cases of infection B
			4 cases of new coronavirus infection
Aged 65 or above	8	8	0 case of infection A
			0 cases of infection B
			2 cases of new coronavirus infection
The total number of patients	222	/	13
The total number of cases	/	237	/

Note Among 214 patients aged 18～64, 15 visited the clinic twice

Table 1B Age stratification and number of infectious disease of 24 child patients

Age	patients(N)	cases(N)	Number of infectious diseases(N)
child patient	24	25	1 cases of infection A
			0 case of infection B
			0 case of novel coronavirus infection
The total number of child patients	24	/	1
The total number of cases	/	25	/

Note Among 24 child patients, 1 visited twice

Table 2A Registered residence of 214 young and middle-aged patients in the outpatient of Infectious diseases

Regions of China	Number of patients(N)	The percentage(%)
Shenzhen	22	10.28%
Guangdong province (outside Shenzhen)	19	8.88%
Wuhan	9	4.21%
Hubei province (outside Wuhan)	39	18.22%
Provinces other than Hubei and Guangdong (Hunan, Guangxi, Shanxi, Shanxi, Shandong, Liaoning, Beijing, Shanghai, Jiangsu, Zhejiang, Chongqing, Yunnan, Guizhou, Fujian, Hebei, Henan, Jilin, Heilongjiang, Jiangxi, Sichuan, Anhui, Xinjiang/no Xizang, Gansu residents	122	57.01%/
Unknown (not provided by the patient)	3	1.40%/
A total of patients	214	/

Note 80.84% of the patients were from non-Guangdong province (173/214)

Citation: Li Z, Minqiang H, Jian L, et al. Report of 246 patients in department of infection during novel coronavirus infection epidemic. *MOJ Gerontol Ger.* 2020;5(2):61–59. DOI: 10.15406/mojgg.2020.05.00232

Table 2B Registered residence of 24 pediatric patients in outpatient of infectious diseases

Regions of China	Patients(N)	The percentage(%)
Shenzhen	10	41.67%
Guangdong province (outside Shenzhen)	2	8.33%
Wuhan	1	4.17%
Hubei province (outside Wuhan)	3	12.50%
Provinces other than Hubei and Guangdong (Hunan, Chongqing, Yunnan, Guizhou, Anhui)	8	33.33%/
A total of patients	24	/

Note 50% of the child patients were from non-Guangdong province (12/24)

Table 3A Blood routine results of 214 young adults (18～64 years old) in the outpatient of Infectious diseases

	WBC of Routine blood(N=206)	**Lymphocyte absolute value(N=206)**	**CRP(>10mg/Labnormal)**
			(N=201)
Mean ± standard deviation(109/L)	8.11±2.863	1.65±0.652	/
The minimum～The maximum value(109/L)	2.25～18.43	0.31～3.86	<0.5～>200
Percentage of exceptions (%)	26.70%(55/206)	21.36%(44/206)	Abnormally high value 35.32%(71/201)

Note: the indicators of the first blood routine examination of 206 people were counted (6 people had blood routine examination twice), and 8 people did not have blood routine examination. Statistics were performed on the first CRP of 201 people (5 people did CRP for 2 times), and 13 people did not check CRP.

Table 3B Blood routine results of 24 pediatric patients in outpatient of infectious diseases

	WBC of Routine blood(N=24)	**Lymphocyte absolute value(N=24)**	**CRP(>10mg/Labnormal) (N=23)**
Mean ± standard deviation(109/L)	8.05±3.205	1.98±0.974	/
The minimum ～The maximum value (109/L)	2.63～18.2	0.63～4.14	<0.5～72.8
Percentage of exceptions(%)	25%(6/24)	37.5%(9/24)	Abnormally high value 30.43%(7/23)

Table 4A Results of influenza detection and nucleic acid detection of novel coronavirus in 214 young and middle-aged patients in the outpatient of Infectious diseases

The test items	**Number of patients tested(N)**	**Detection percentage(%)**	**Number and percentage of positive cases(%)**	**Number and percentage of negative cases(%)**
Influenza A virus antigen assay	104	48.60%(104/214)	4.81%(5/104)	95.19%(99/104)
Influenza B virus antigen assay	104	48.60%(104/214)	1.92%(2/104)	98.08%(102/104)
Nucleic acid detection of new coronavirus	99	46.26%(99/214)	4/99=4.04%	95.96%(95/99)
Total number of infectious diseases	/	/	5.14%(11/214)	94.86%)203/214)

Note 99 patients were examined for novel coronavirus nucleic acid (5 patients were examined twice), and 115 patients were not examined for nucleic acid. Among the 4 nucleic acid positive patients, 3 were all negative for influenza A and B antigens, and 1 case was not tested for influenza A and B antigens

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Table 4B Results of influenza testing and nucleic acid testing of novel coronavirus in 24 pediatric patients in outpatient of infectious diseases

The test items	patients tested(N)	Detection percentage(%)	Number and percentage of positive cases(%)	Number and percentage of negative cases(%)
Influenza A virus antigen assay	16	66.67%(16/24)	6.25%(1/16)	93.75%(15/16)
Influenza B virus antigen assay	16	66.67%(16/24)	0	100%(16/16)
Nucleic acid detection of new coronavirus	14	58.33%(14/24)	0	100%(14/14)
Total number of infectious diseases	/	/	4.17%(1/24)	95.83%(23/24)

Note 14 of 24 pediatric patients were tested for novel coronavirus nucleic acid, all of them were negative, and there was no novel coronavirus infection

Table 5A Imaging results of 214 young and middle-aged patients in outpatient of infectious diseases

Imaging examination	Number of patients examined(N)	Number of cases examined(N)	Not check(N)	Normal(N)	Abnormal(N)	Percentage of exceptions(%)
chest X-ray	166	169	48	152	15(7 cases pulmonary inflammation)	4.22%(7/166)
chest CT	33	33	181	18	15(5 cases pulmonary inflammation)	15.15%(5/33)

NoteAmong 15 cases of abnormal chest X-ray, 8 cases were calcified lesions or nodules or fibrous cords. Acute pulmonary inflammation was found in 7 cases Among 15 cases of abnormal chest CT, 10 cases were calcified lesions or nodules or fibrous cords. Acute pulmonary inflammation was found in 5 cases

Table 5B Imaging results of 24 pediatric patients in outpatient of infectious diseases

Imaging examination	Number of patients examined(N)	Not check(N)	Normal(N)	Abnormal(N)	Percentage of exceptions(%)
chest X-ray	13	11	13	0	0
chest CT	4	20	1	1	25%(1/4)

Note Among 4 cases of chest CT, 1 case had no obvious lesions; Two cases were calcified and fibrous. One case presented with acute pulmonary inflammation

Table 6A Disease types and proportion of 214 young and middle-aged patients in outpatient of infectious diseases

Types of disease	Number of patients(N)	The percentage(%)
Acute upper respiratory tract infection	162	75.70%(162/214)
Acute gastroenteritis	15	7.01%(15/214)
Acute tonsillitis	8	3.74%(8/214)
Asymptomatic physical examination	8	3.74%(8/214)
Influenza A (virus antigen positive)	5	2.34%(5/214)
The new coronavirus nucleic acid tested positive	3	1.40%(3/214)
Influenza B (virus antigen positive)	2	0.94%(2/214)
Chicken pox	2	0.94%(2/214)
Community pneumonia	2	0.94%(2/214)
Drug eruption	2	0.94%(2/214)
Subacute thyroiditis	1	0.47%(1/214)
Acute mastitis	1	0.47%(1/214)
Hepatitis B antigen carried for review	1	0.47%(1/214)
Acute conjunctivitis	1	0.47%(1/214)
Herpes simplex	1	0.47%(1/214)
sinusitis	1	0.47%(1/214)

Note 2 patients with chicken pox (1 patient with influenza A) and 5 patients with influenza A (1 patient with chicken pox)

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Table 6B Disease types and proportion of 24 pediatric patients in outpatient of infectious diseases

Types of disease	Number of patients(N)	The percentage(%)
Acute upper respiratory tract infection	19	79.17%(19/24)
Acute bronchitis	1	4.17%(1/24)
Community pneumonia	1	4.17%(1/24)
Influenza A (virus antigen positive)	1	4.17%(1/24)
Postoperative right temporomandibular joint with fever	1	4.17%(1/24)
Asymptomatic physical examination	1	4.17%(1/24)
The novel coronavirus nucleic acid tested positive	0	0
Influenza B (virus antigen positive)	0	0

Figure 1 A chest radiograph of patient named WHM who was tested positive for new coronavirus nucleic acid.

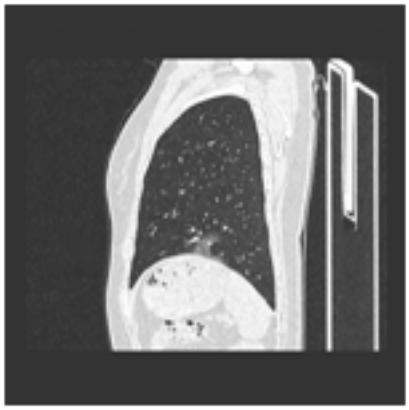

Figure 2 A chest CT of patient named WHM who was tested positive for new coronavirus nucleic acid.

Patient WHM: female, 45 years old, from Huanggang city, Hubei province. Past healthy. 6 days before the onset of the disease through Wuhan, Her father with new coronavirus pneumonia was diagnosed and accepted treatment in infectious disease hospital. On January 29, 2020, She visited outpatient of infectious disease, chief complaint: fever for half a day, body temperature 38.2-37.9□, no cough, no diarrhea. Routine blood test: WBC4.68*10^9/L, NEUT% 59.8%, LYMPH% 29.5%, LYMPH1.388*10^9/L, CRP3.82mg/L, influenza A and B virus antigen were all negative, and the nucleic acid test of new coronavirus was positive. Chest X-ray: no abnormality was found in both lungs and heart diaphragm. Chest CT showed ground glass shadow in anterior inner basement segment of lower lobe of left lung. Preliminary diagnosis: new coronavirus pneumonia.

Figure 3 A chest CT of patient named WHM who was tested positive for new coronavirus nucleic acid.

In the 12 working days, 8 patients aged ≥65 years visited outpatient of infectious diseases. Who aged 65□85 years, with an average age of 70.9±6.64 years? Males accounted for 25% (2/8) and females 75% (6/8). Hubei nationality accounted for 62.5% (5/8). All 7 patients were negative for influenza A and B virus antigens, and 1 patient did not test. 5 patients were tested for new coronavirus nucleic acid, of which 2 patients tested positive and 3 patients did not test. The 2 patients with positive nucleic acid test were all women from Hubei province, living in Wuhan, Hubei province. We present the case data of two patients who tested positive for the nucleic acid of the new coronavirus as follows (Figure 4–9).

Figure 4 A chest X-ray of patient named ZAW who was tested positive for new coronavirus nucleic acid.

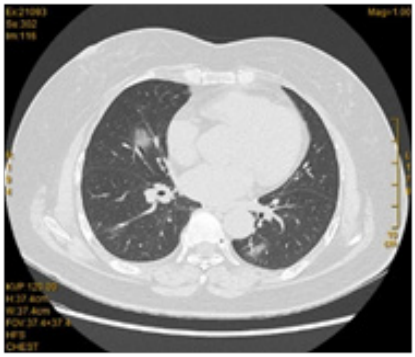

Figure 5 A chest CT of patient named ZAW who was tested positive for new coronavirus nucleic acid.

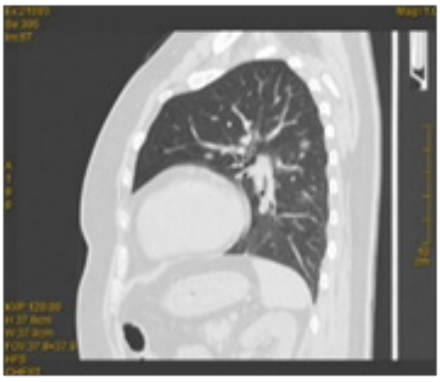

Figure 6 A chest CT of patient named ZAW who was tested positive for new coronavirus nucleic acid.

Patient ZAW: female, 65 years old, from Huangshi city, Hubei province. Past healthy. Within 14 days after the onset of the disease in Wuhan, Hubei province traveling, contacted with patient who had fever, cough, sputum. On January 30, 2020, She visited outpatient of infectious disease, chief complaint: fever 1 day,temperature of 37.8-37.7□, no cough, no diarrhea. Routine blood test: WBC4.43*10^9/L, NEUT% 64.9%, LYMPH% 27.5%, LYMPH1.22*10^9/L, CRP27.51mg/L, and the detection of influenza A and B virus antigen were all negative, and the detection of new coronary nucleic acid was positive. Chest radiograph: no significant active lesions in both lungs. Chest CT showed multiple inflammatory lesions in both lungs, and the possibility of viral pneumonia was considered. Aortic atherosclerosis. Preliminary diagnosis: new coronavirus pneumonia.

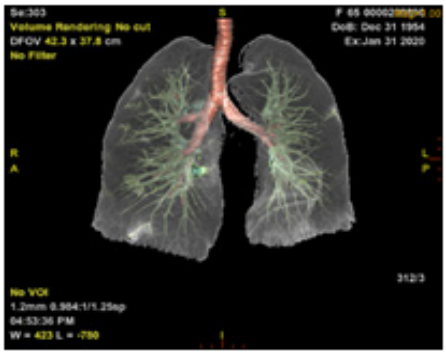

Figure 7 A chest CT of patient named ZAW who was tested positive for new coronavirus nucleic acid.

Figure 8 A chest CT of patient named ZAW who was tested positive for new coronavirus nucleic acid.

Figure 9 A chest X-ray of patient named WXE who was tested positive for new coronavirus nucleic acid.

Patient WXE: female, 78 years old, from Wuhan city, Hubei province, with previous history of hypertension. Who contacted with people from Wuhan, Hubei province, contacted with patients with fever, cough and sputum within 14 days. Whose spouse came to Shenzhen from Wuhan and was treated in Shenzhen infectious disease hospital. The whole family was isolated in the hotel. On February 2, 2020, She visited outpatient of infectious disease, chief complaint: fever 3 days, body temperature 37.5-36.3□, sore throat, no cough, no runny nose, no diarrhea. Routine blood test: WBC5.39*10^9/L, NEUT% 48.2%, LYMPH% 38.6%, LYMPH2.08*10^9/L, CRP9.35mg/L, all the antigens of influenza A and influenza B were negative, and the nucleic acid of new coronavirus was positive. Chest radiograph:

double lower lung field grain enhanced, visible a few patchy density increased shadow. No chest CT examination. Preliminary diagnosis: new coronavirus pneumonia.

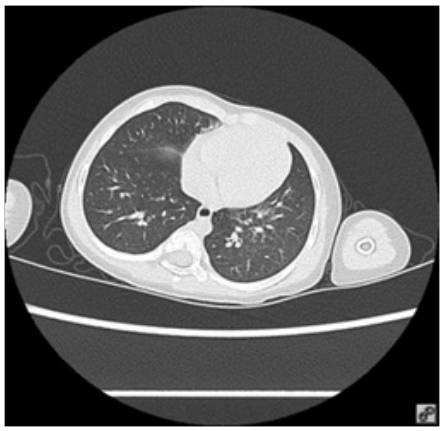

Figure 10 Chest CT of WQY (2 years and 5months old) with a negative nucleic acid test of novel coronavirus.

We analyzed imaging findings of 24 pediatric patients in outpatient of infectious diseases (Table 5B) and the case data of a child patient who was negative for nucleic acid test of novel coronavirus (Figure 10).Patient WQY: female, 2 years and 5months old, from Nanshan district, Shenzhen. Past healthy. Who lived in Hubei within 14 days after the onset. On February 6, 2020, She visited outpatient of infectious disease, chief complaint: fever 3 days, 38.6-36.9□, cough, sputum, runny nose, nasal congestion, no diarrhea. Routine blood test: WBC9.45*10^9/L, NEUT% 52.2%, LYMPH% 38.6, LYMPH3.65*10^9/L, CRP 2.8mg /L, influenza A and B virus antigen were all negative, and the nucleic acid test of novel coronavirus was negative. Chest radiograph: no. Chest CT showed inflammation in the posterior basal segment of right lower lobe and left lower lobe. Preliminary diagnosis: community acquired pneumonia.

We calculated disease types and proportions of 214 young and middle-aged patients and reported them as follows (Table 6A).

Part four: discussion

Wuhan, Hubei province, was closed at 10:00 am on January 23 due to new coronavirus pneumonia. On January 24, our hospital started 24-hour outpatient service of department of infection, Our hospital is a general hospital. The common cases in daytime outpatient of infectious diseases are hepatitis, tuberculosis, and sporadic cases of intestinal diseases. There are 6 consultation rooms and 2 isolation observation rooms, and there are 10 inpatient wards. There is a separate radiological examination room and laboratory. There are 8 medical staff in department of infection. Since January 24, 2020, the number of medical staff had increased to 35, the emergency observation ward and inpatient observation ward section 2 were established, as well as the emergency intensive care unit (EICU) for critically ill patients. The patient whose body temperature exceeded 37.2□, with or without respiratory symptoms, should treat in outpatient of infectious disease. From January 24 to February 4, patients were examined for novel coronavirus nucleic acid if they hadepidemiological history. After February 4, comprehensive detection of novel coronavirus nucleic acid began for patients with or without epidemiological history.On February 6th, inpatient department of our hospital started an isolation ward. The patients who tested positive for the new coronavirus nucleic acid were transferred to Shenzhen special hospital of infectious diseases by special vehicle under negative pressure (after the first positive nucleic acid test and the positive nucleic acid test was confirmed again).

During 12 working days, 111 adult patients were tested for influenza A and B antigens in our hospital, among whom 5 cases of influenza A and 2 cases of influenza B were reported. Among 104 adult patients tested fornovel coronavirus nucleic acid, 6 cases were positive nucleic acid test, among which 5 cases were clinically diagnosed as novel coronavirus pneumonia and 1 case was suspected as novel coronavirus pneumonia. Among 6 cases with positive new coronavirus nucleic acid test, 4 cases were from Hubei province, 1 case was from Hunan province (contacted with people with respiratory symptoms), and 1 case was from Zhejiang province (contacted with relatives from Hubei province who was confirmed novel coronavirus pneumonia). None of 13 adult patients (influenza A, influenza B, new coronavirus pneumonia) with acute respiratory infection were medical personnel. Preliminary statistics showed that number of patients treated every 24 hours was about 30. The first three diseases were acute upper respiratory tract infection, acute gastroenteritis and acute tonsillitis. In 12 days of January 24 to February 6, 222 adult patients (237 cases) visited to our hospital, among which 6 patients were positive for novel coronavirus nucleic acid test. All 6 adult patients had one of following epidemiological histories. (1) travel history or residence history of Wuhan and surrounding areas or other communities with reported cases within 14 days before onset; (2) a history of exposure to a patient with novel coronavirus infection (nucleic acid test positive) within 14 days prior to onset; (3) within 14 days prior to onset, the patient had been exposed to a patient with fever or respiratory symptoms from Wuhan city and surrounding areas, or from communities with reported cases; (4) aggregation. The six adult patients who tested positive for novel coronavirus nucleic acid were isolated in six wards,one room per person. In terms of treatment, commonly used drugs : oseltamivir phosphate capsule 75mg, oral, Q12h; Lotus qingwen granule (Traditional Chinese medicine (TCM)) 6g, oral, Tid (for patients with fever or muscle pain); Acetaminophen tablets 0.5g, oral, one tablet (antipyretic analgesia) or ibuprofen sustained release capsule 0.3g, oral, QD, etc. After the consultation of expert group, the patient was transferred to Shenzhen infectious disease hospital for further treatment. Our hospital is a general hospital. In January, 2020, there were about 100 child patients in outpatient of general pediatrics every day. In February, with Spring Festival holiday and the outbreak of novel coronavirus pneumonia, the number of outpatient visits averaged 20 per day.The temperature of child patients exceeded 37.2□, with or without respiratory symptoms, they were all treated in the outpatient of infectious diseases. Preliminary statistics of number of visiting outpatient of infectious diseases averaged 2～3 per day. During 12 working days, 16 child patients were tested for influenza A and B antigens in our hospital, among whom 1case of influenza A and 0 case of influenza B were reported. Among 14 child patients tested fornovel coronavirus nucleic acid, 0 case was positive nucleic acid test. The top three categories were acute upper respiratory infection, bronchitis, and pneumonia likewise. Fifteen children (62.5%) had one of the epidemiological histories. We encouraged all patients to eat nutritious food and drink water and get plenty of rest. The novel coronary pneumonia prevention and treatment team of Shenzhen university general hospital formulated check-diagnosis-isolation treatment process. The patient was kept in hospital for isolation, resolutely blocked the transmission of disease, effectively blocked the spread of disease.

The novel coronavirus pneumonia prevention and treatment team of Shenzhen university general hospital had developed □the registration form of person who closely contacted novel coronavirus pneumonia cases.We developed a list of suspected cases of novel coronavirus pneumonia admitted to hospital. We designed the contact form in hospital (notice time, personnel, inspection node, inspection result, inspection result, patient whereabouts, signature of the recipient, etc.). The chief duty officer in hospital keeps telephone open 24 hours to receive nucleic acid test results, including submitting for the first time/review. The 24-hour outpatient doctors in department of infectious diseases analyzed and clarified the disease spectrum of these patients, so as to guide any departments of hospital to equip with materials and arrange observation beds. which can not only meet need of patients (currently 30～50 isolated beds/general hospitals), but also avoid waste of resources. Medical personnel according to different patients, take following different protective measures, 1. General protection: suitable for ordinary (urgent) examine, the medical workers in general wards. Worker should wear overalls and surgical masks and do hand hygiene. 2. Level-1 protection: it is suitable for medical staff of the department of infectious diseases (emergency). When working, medical staff should wear overalls, isolation clothing, working cap and surgical mask, and latex gloves if necessary. And do hand hygiene. 3. Level-2 protection: suitable for medical personnel entering the observation room, isolation ward and isolation ward where the patients with novel coronavirus infection were; Staff who come into contact with specimens collected from patients, their secretions, excreta, used objects and dead bodies, medical staff and drivers who transport patients. Adopt droplet isolation and contact isolation. The medical personnel entering the isolation ward and the isolation ward must wear the medical protective mask, the work clothes, the isolation clothing or the protective clothing, the shoe cover, the gloves, the work cap. Strictly according to the clean area, potential pollution area and pollution area division, paying attention to the respiratory tract, oral cavity, nasal mucosa and eye hygiene and protection. 4. Level-3 protection: suitable for medical personnel who can initiate aerosol operation. The operations that can induce aerosol include endotracheal intubation, atomization treatment, examination of induced sputum, bronchoscopy, sputum aspiration of respiratory tract, nursing of tracheal incision, thoracic physical therapy, nasopharyngeal aspiration, positive pressure mask ventilation, high-frequency shock ventilation, resuscitation operation, and post-death lung biopsy. In addition to Level-2 protection, a mask or a full respirator should be added. In case of emergency operation of adult or pediatric cardiothoracic surgery, the nasopharyngeal swabs and blood needed for nucleic acid test of novel coronavirus were retained in emergency department without waiting for test results. Medical personnel should adopt Level-2 or Level-3 protection during emergency surgery.

In short, we studied and sorted out diagnosis and treatment process of out-patient of infectious diseases, prevented and controlled novel coronavirus infection scientifically, and accumulated experience in management of acute infectious diseases in migrant city.In view of the confirmed cases of adult patients in Shenzhen and confirmed cases of children in other cities, doctors still need to make Level 2, level 3 protection when giving emergency surgery of adult patients or pediatric during the epidemic of novel coronavirus infection.

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Conflicts of interest

The authors declare have no conflict of interest about the publication of this paper.

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