



LETTER TO THE EDITOR

Clinical characteristics of SARS-CoV-2 infection in a rural area in Germany

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ETHICS APPROVAL

The ethics committee of the University of Lübeck (Germany) approved the analysis of the routine data presented here (reference

FULL ARTICLE:

Dear Editor

As of 1 May 2020, more than 3.4 million cases of confirmed SARS-CoV-2 infections and more than 240 000 deaths due to Coronavirus Disease 2019 (COVID-19) had been reported worldwide^{1,2}.

In Germany, about 85% of COVID-19 patients are cared for mostly by family physicians in community practices, which allows hospitals to concentrate on critically ill patients. In order to ensure regular operations of primary care practices in Freudenstadt, and due to the limited supply of protective gear during the pandemic, one practice in the region was selected to diagnose and treat all suspected and/or confirmed COVID-19 cases.

This district in the Black Forest, in south-western Germany, comprises 870 km² with a population of 117 935 citizens. Patient care is provided via 98 primary care practitioners (family physicians, general internist and pediatricians) based in four small cities and 12 municipalities. One acute care hospital with 10 intensive care beds is located in the district. Here, we report and clinically characterize the first cohort of SARS-CoV-2 infected patients in this rural district.

Beginning with the first case reported on 4 March, until 24 April 2020, the district observed a period prevalence ratio of 442.6 PCR-confirmed cases/100 000 inhabitants to the national health authorities³. Thus, during the study period, Freudenstadt was considered one of the areas most severely affected by SARS-CoV-2 infections in Germany.

Between 4 March and 24 March, a total of 829 patients with a

suspected SARS-CoV-2 infection were sent to this practice by primary care physician for oropharyngeal, real-time RT-PCR testing⁴. A total of 102 (12.3%) patients tested positive. According to national guidelines, 100 of these patients went into quarantine at home, and two required hospitalization. Of the 100 patients who quarantined at home, 91 (91%) agreed to an extended follow-up period by this specialized COVID-19 practice for infection-related symptoms.

Corresponding to the national average, the most common risk factor among these 91 patients (median age 44.0 years, 57.1% male) was arterial hypertension, followed by diabetes mellitus, bronchial asthma and chronic heart failure (Table 1). The most common presenting symptoms were fatigue (84.6%), cough (75.8%), and loss of smell and taste (71.4%).

As shown in Table 2, 43.8% of the subjects had elevated ferritin levels and 41.0% had low levels of eosinophil granulocytes. C-reactive protein, D-dimers and LDH-levels were within normal range, reflecting the mild course of disease.

Between 5 March and 24 April, none of these patients required hospital admission, and no deaths were reported. Elderly patients, often cared for in retirement homes by family physicians, are underrepresented in our sample.

Our cohort represents the first 91 COVID-19 patients from one of the districts most affected by the early phase of the SARS-CoV-2 pandemic in rural Germany. The exclusive management of patients infected with SARS-CoV-2 by specialized community practices could be an effective approach to treatment, as long as the clinical course of these patients remains mild.

Table 1: Characteristics of the patient cohort, and nationwide averages⁵⁻¹⁰

Variable	Nationwide average (%)	Number of patients n (%)
Characteristic		
Median age (years)	47.8 [†]	44
Age >80 years	6.5 [†]	0 (0)
Age >70 years	15.7 [†]	4 (4.4)
Age >60 years	28.2 [†]	6 (6.6)
Female	50.6 [†]	39 (42.9)
Male	49.4 [†]	52 (57.1)
Underlying medical condition		
Smoking	23.8 [‡]	9 (9.9)
Hypertension	31.8 [‡]	21 (23.1)
Diabetes mellitus	7.7 [‡]	6 (6.6)
Asthma	6.2 [‡]	4 (4.4)
Heart failure	4.8 [‡]	3 (3.3)
Other chronic diseases		9 (9.9)
Symptom		
Fatigue		77 (84.6)
Cough		69 (75.8)
Loss of smell/taste		65 (71.4)
Running nose		64 (70.3)
Body aches		62 (68.1)
Headache		62 (68.1)
Sore throat		51 (56.0)
Sudden onset of illness		49 (53.8)
Fever		40 (44.0)
Diarrhea		33 (36.3)
Dry mouth [§]		24/89 (27.0)
Chest pressure		12 (13.2)

[†] Data from 2018.

[‡] Data from 2017.

[§] Data for only 89 patients were available.

Table 2: Laboratory findings for patient cohort

Parameter	NR	Median	% <LNR	% >UNR
Leukocytes (10 ³ /µL)	3.50–9.80	6.1	1.1	6.6
Erythrocytes (10 ⁹ /µL)	4.5–5.9	4.9	7.7	3.3
Hemoglobin (g/dL)	13.5–17.5	14.8	5.5	0.0
Hematocrit (L/L)	0.40–0.53	0.4	8.8	0.0
Thrombocytes (10 ³ /µL)	140–360	247.0	9.9	13.2
Neutrophilic granulocytes (n=83) [†] (%)	40–75	57.3	2.4	1.2
Lymphocytes (n=83) [†] (%)	18–48	32.1	2.4	1.2
Monocytes (n=83) [†] (%)	4–11	8.2	1.2	14.5
Eosinophilic granulocytes (n=83) [†] (%)	1.0–8.0	1.2	41.0	0.0
Basophilic granulocytes (n=83) [†] (%)	0.0–1.0	0.5	–	3.6
Creatinine (mg/dL)	0.67–1.17	0.8	6.6	1.1
Glomerular filtration rate (mL/min/1.73 m ²)	>60	106.0	2.2	–
Glutamate pyruvate transaminase (IU/L)	<50	27.0	–	17.6
Gamma-glutamyltransferase (IU/L)	<60	27.0	–	17.6
Lactate dehydrogenase (n=89) [†] (IU/L)	< 49	183.0	–	16.9
C-reactive protein (n=90) [†] (mg/dL)	<0.5	0.5	–	27.8
D-dimers (n=87) [†] (µg/L)	<499	353.0	–	34.5
Ferritin (n=89) [†] (µg/L)	30–400	240.0	1.1	43.8
Procalcitonin (n=89) [†] (µg/L)	<0.5	0.0	–	1.1
Troponins (n=89) [†] (pg/mL)	Negative	4.2	–	3.4

[†] Data not available for all 91 patients but only for the specified number. Date of sample collection: first follow-up on 26 and 27 March.

NR, normal range. LNR, lower normal range. UNR, upper normal range.

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