SARCOIDOSIS VASCULITIS AND DIFFUSE LUNG DISEASES 2017; 34; 217-225 DOI: 10.36141/svdld.v34i3.6038

Prevalence of interstitial and other lung diseases on Aruba

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Abstract. *Background:* Health care management has to be based on the local prevalence of diseases and the local diagnostic and therapeutic needs. So far, no systematic registration system for various lung diseases exists on Aruba. Questions that need to be answered are: what specific lung disorders occur on Aruba, and what are the specific needs there? The aim of this study was to assess the prevalence of lung disorders and the diversity of the patient population. *Methods:* Retrospectively, all records (n=2352) of patients of the Department of Respiratory Diseases of the Dr. Horatio E. Oduber Hospital, Aruba, who were seen at the clinic at least once in the period between January 2010 and October 2014 were reviewed. *Results:* Asthma (22%) and sleeping disorders (20%) were the most prevalent diagnoses. The mean body mass index (BMI) of the overall lung patient population was 31.6 kg/m^2. Obstructive sleep apnea syndrome (OSAS) was the most frequently diagnosed sleeping disorder (78.4%). A diagnosis of interstitial lung diseases (ILD) was established in 4.4% of the cases. Among the ILDs, non-specific interstitial pneumonia (NSIP: 28%), sarcoidosis (18%) and idiopathic pulmonary fibrosis (IPF: 16%) were the most frequent. *Conclusion:* Obesity and OSAS appeared to be major problems on Aruba. Increased awareness, education, and diagnostic facilities are required to prevent and diagnose obesity and OSAS in an early stage. NSIP, sarcoidosis and IPF are the most frequently diagnosed ILDs on Aruba, and optimization of ILD management is warranted, considering new treatment options available for ILD, especially for IPF. *(Sarcoidosis Vasc Diffuse Lung Dis 2017; 34: 217-225)*

Key words: body mass index, interstitial lung diseases, lung diseases, obesity, obstructive sleep apnea, sleep disorders

Introduction

In a dynamic environment, improving health care, controlling costs and balancing capacity and demand are major challenges for health care management (1), and improving health care efficiency and cost control are indeed top policy issues around the globe in today's health care management. Moreover, it is widely recognized that growth patterns of total health system costs are unsustainable, particularly with the demographic challenge of an aging population (2). The health care industry is constantly changing, with significant change coming from many

Received: 19 December 2016
Accepted after revision: 27 March 2017
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sources, including legislative, political and policy initiatives (1); international as well as domestic economic and availability forces; demographic shifts and lifestyle; technological advances and fundamental health care delivery changes (2). These challenges are also present on Aruba. Epidemiological studies are important tools for measuring the magnitude of health problems, identifying prevalence's of diseases, identifying the natural history and etiology of diseases and facilitating the establishment of health care plans for disease prevention and management.

Aruba is an island in the Atlantic Ocean, approximately 25 kilometers north of Venezuela, with 106,049 Inhabitants (central bureau of statistics, Aruba), the population is very diverse. The native inhabitants of Aruba are Indians, mostly from Venezuela. Later, the island also became inhabited by Africans and Europeans. The current population of Aruba consists of more than 40 different nationalities. The constant flow of tourists (824,300 in 2010; central bureau of statistics, Aruba) to the island contributes to even greater ethnic diversity among the people applying for health care at the Dr. Horatio E. Oduber Hospital, Oranjestad, which is the only hospital on the island.

It is likely that there are issues in health care management on Aruba that have not yet been identified or fully assessed. It is important to find these issues, because until recently, it was not uncommon for patients to have to travel abroad for diagnostics or treatment, which is costly and causes delays in establishing a diagnosis. The health care system on Aruba will have to effectively manage change and new developments. Therefore, it is first of all important to be informed about the domestic population and especially their diagnostic and therapeutic needs. One area where such information is needed is that of lung disorders, where the question is what specific lung disorders patients on Aruba are suffering from. Beside disorders like asthma and pulmonary infections, rarer conditions such as interstitial lung diseases (ILD) and decompression sickness can be expected to occur, requiring special equipment and trained personnel. The aim of the present survey was to obtain information about the needs of the population of lung patients on Aruba in terms of health care management, special topics, purchase of specific devices and diagnostics, and training strategies for health care workers.

Methods

We retrospectively reviewed all medical records of patients seen at the outpatient clinic of the Department of Respiratory Medicine of the Dr. Horatio E. Oduber Hospital at least once in the period between January 2010 and October 2014. This was done by two medical students from Radboud University Nijmegen at the request of the pulmonologists of the hospital, in collaboration with the research team of the ild care foundation. A total of 2352 records (1283 [54.5%] females; 1069 [45.5%] males) were analyzed. The demographic data and some clinical data are summarized in table 1. Patient records were further searched for date of birth, BMI and smoking status. The diagnosis confirmed by the local pulmonologists was regarded as decisive. All patients were diagnosed according to American College of Chest Physicians (ACCP) guidelines and European Respiratory Society (ERS) guidelines. Non-conclusive cases were discussed with the staff. If no consensus was reached, the cases were assigned a status of unclassified. Patients were assigned to 11 groups of lung diseases according to the Dutch system of diagnosis–treatment combinations (3) for further analysis. The group categorization is shown in table 1.

High resolution computer tomography scans (HRCTs) of all ILD cases were re-evaluated during weekly video conferences with an ILD expert from the Netherlands (MD), before a final diagnosis was rendered. Idiopathic interstitial pneumonias (IIP) were diagnosed according to the ATS/ERS consensus classification (4). Sarcoidosis was diagnosed based on the criteria published by the American Thoracic Society (ATS), the ERS, and the World Association of Sarcoidosis and Other Granulomatous Disorders (WASOG) (5). Idiopathic pulmonary (IPF) fibrosis was diagnosed according to the ERS/ATS/ALAT (Latin American Thoracic Society) clinical practice guideline (6). The American College of Rheumatology (ACR) criteria were used to establish the diagnosis of connective tissue disease (CTD) (7, 8).

In the Netherlands, studies involving human subjects must undergo a medical ethics review if they are subject to the Dutch Medical Research Involving Human Subjects Act (WMO). In view of the retrospective character of this study and according to the relevant criteria, approval by a medical ethics committee was not required.

Table 1. Classification of lung diseases diagnosed at the Department of Respiratory Medicine of the Dr. Horacio E. Oduber Hospital on Aruba into 11 categories. The diseases were recorded according to the Dutch diagnosis treatment combination (DBC) system (3)

Category	Disease
Asthma	asthma, coughing due to hyper reactivity, gastric asthma
Sleep disorders	sleep disorders identified with polygraphy, sleep disorders identified with polysomnography, other sleep disorders
Infectious disorders	pneumonia, recurrent infections with compromised immune system, cystic fibrosis, bronchiectasis, acute (tracheo-)bronchitis, dengue
COPD	chronic obstructive pulmonary disease
ILD	interstitial lung diseases, autoimmune diseases, sarcoidosis, vascular diseases
Malignancies	non-small cell lung carcinoma (NSCLC), Small-cell lung carcinoma (SCLC), mesothelioma, mediastinal tumors, metastasis from other primary tumor, other tumors
Tuberculosis and non-tuberculosis infections	tuberculosis, extra pulmonary tuberculosis, tuberculosis and HIV, multi-resistant tuberculosis, infections with non-tuberculosis mycobacteria, infections with non-tuberculosis mycobacteria and HIV
Pleural abnormalities	pleural abnormalities, pneumothorax
Pulmonary embolism	pulmonary embolism
Other	primary pulmonary hypertension, primary cardiac, neuromuscular, chest wall, neurological, accompaniment of lung transplantation, accompaniment of heart–lung transplantation, hyperventilation syndrome, insect allergy and non-pulmonary allergy, nicotine abuse, pulmonary rehabilitation, palliation, scar, benign tumors, pre-operative screening
Unclassified	diagnosis not ascertained, chest pain, dyspnea, coughing, hemoptysis, fatigue

Data storage and statistical analysis

Data were collected using Microsoft Access, and statistical analysis was performed using SPSS 20 software. Descriptive statistics, i.e., means, standard deviations, range, frequencies and percentages, were used to describe the study variables.

Results

Population characteristics

The study population included 2352 patients. The mean age of the population was 56.0±SD 16.3 (range: 4-98) years. There was a slight predominance of women (1283, 54.5%) over men (1069, 45.5%). The population included the following races: Hispanic (1403, 59.7%), Caucasian (278, 11.8%), Afro-American (261, 11.1%), Asian (31, 1.3%) and unknown, including multiracial (279, 16.1%). There was no difference in the prevalence of diseases between races. The mean body mass index (BMI) of the population was 31.6 kg/m^2 and the median BMI was 30.4±SD 8.8 kg/m^2 (range: 12.1-132.7).

Prevalence of various lung disorders

The distribution of lung diseases among this study population is listed in table 2. Asthma (21.6%) and sleep disorders (19.9%) were the most prevalent diagnoses. Within the group of sleep disorders, obstructive sleep apnea syndrome (OSAS) was the most frequent diagnosis (78.4%), while 5.8% had a polysomnography consistent with central sleep apnea. Other sleep disorders were diagnosed in 15.8%. More men than women were diagnosed with sleep disorders (56.4% vs 43.6%). BMI was significantly higher in the sleep disorder group than in the total study population (38.1 kg/m^2 vs 31.6 kg/m^2, p<0.001). There was a significant difference in BMI between men and women (p=0.043), women being significantly heavier (BMI: 40.3 vs 36.4, p<0.001).

Malignancies accounted for 3.9% of the cohort, and included metastasis (42, 46.2%), non-small-cell lung carcinoma (NSCLC: 36, 39.6%), mediastinal tumors (4, 4.4%), small-cell lung carcinoma (SCLC: 2, 2.2%), mesothelioma (2, 2.2%), and other tumors (5, 5.5%).

Dengue fever was found in 6 cases, including a case of dengue pneumonitis and a case of diffuse al-

Table 2. Prevalence of lung diseases at the Dr. Horacio E. Oduber hospital on Aruba, as number of patients (%), with mean/median BMI (±SD, range), sex (%), and mean age (± SD, range). The diseases were recorded using the Dutch diagnosis treatment combination (DBC) system (3)

Disease	Number of patients (percentage)	Mean/Median BMI±SD (range)	Female/Male (percentage)	Mean age±SD (range)
Asthma	508 (21.6)	30.0/29.5±6.5 (12.1-61.4)	379/129 (74.6/25.4)	51.1±17.6 (4-95)
Sleep disorders	468 (19.9)	38.1/35.9±10.6 (20.3-132.7)	204/264 (43.6/56.4)	56.1±11.8 (10-92)
Infectious disorders	237 (10.1)	29.0/28.4±6.4 (13.2-49.2)	111/126 (46.8/53.2)	58.4±17.7 (17-96)
COPD	187 (8.0)	27.7/26.9±6.5 (15.2-53.8)	60/127 (32.1/67.9)	66.2±11.1 (40-91)
ILD	104 (4.4)	28.5/28.4±6.6 (16.2-49.0)	63/41 (60.6/39.4)	60.0±14.5 (22-96)
Malignancies	91 (3.9)	28.1/27.2±6.1 (15.9-46.6)	43/48 (47.3/52.7)	65.8±11.0 (27-87)
Tuberculosis and non-tuberculosis infections	82 (3.5)	27.0/26.8±7.0 (13.6-45.1)	49/33 (59.8/40.2)	46.6±14.7 (12-86)
Pleural abnormalities	60 (2.6)	27.6/27.5±5.6 (19.7-44.6)	19/41 (31.7/68.3)	56.7±19.5 (18-89)
Pulmonary embolism	56 (2.4)	32.8/27.4±11.5 (20.1-60.2)	32/24 (57.1/42.9)	55.2±18.2 (25-92)
Other	276 (11.7)	30.1/29.0±7.8 (16.4-69.8)	158/118 (57.2/42.8)	59.3±17.3 (16-92)
Unclassified	283 (12.0)	29.7/28.4±6.7 (15.2-63.0)	165/118 (58.3/41.7)	54.7±16.6 (14-98)
Total	2352 (100.0)	31.6/30.4±8.8 (12.1-132.7)	1283/1069 (54.5/45.5)	56.5±16.3 (4-98)

COPD=Chronic Obstructive Pulmonary Disease, ILD=Interstitial Lung Diseases

veolar hemorrhage (DAH) associated with dengue fever. For the characteristics of the other disorders, mean/median BMI, male/female ratio and mean age, see table 2.

Distribution of various ILDs

The population of patients suffering from a pulmonary disorder on Aruba included 104 cases (63 [60.6%] female and 41 [39.4%] male) with a presentation consistent with ILD (see table 3). Their mean age at presentation was 60.0 years. The most frequently diagnosed ILDs were non-specific interstitial pneumonia (NSIP) (29, 28%, female/male ratio 59/41%), sarcoidosis (19, 18%, female/male ratio 58/42%) and IPF (17, 16%, female/male ratio 35/65%). Patients in the group of rheumatic diseases, autoimmune and connective tissue related ILD (CT-ILD) were diagnosed with systemic lupus erythematosus (SLE), rheumatoid arthritis, polymyalgia rheumatica and mixed connective tissue disease, all with pulmonary symptoms.

Table 3. Prevalence of interstitial lung diseases at the Dr. Horacio E. Oduber Hospital, Aruba, in number of patients (%), with mean age (±SD, range)

Type of ILD	Number of patients (percentage)	Mean age ±SD (range)
NSIP	29 (27.9)	64.9±13.1 (36-64)
Sarcoidosis	19 (18.3)	53.7±15.1 (24-76)
IPF	17 (16.3)	69.9±13.0 (45-93)
Rheumatic, autoimmune and CT-ILD	12 (11.5)	52.7±9.6 (36-65)
COP/BOOP	6 (5.8)	67.8±12.8 (50-80)
Drug-induced	5 (4.8)	52.6±15.6 (27-68)
GPA	4 (3.8)	49.5±18.7 (22-63)
EAA	3 (2.9)	53.7±8.5 (45-62)
DAD/DAH	2 (1.9)	54.5±2.1 (53-56)
Eosinophilic pneumonia	2 (1.9)	47.5±16.3 (36-59)
Silicosis	2 (1.9)	70.5±19.1 (57-84)
Churg-Straus	1 (1.0)	60
Radiation pneumonitis	1 (1.0)	50
Histiocytosis X	1 (1.0)	45
Total	104	60.0±14.5 (22-96)

NSIP=non-specific interstitial pneumonia, IPF=idiopathic pulmonary fibrosis, CT-ILD=connective tissue related ILD, COP/BOOP=cryptogenic organizing pneumonia/bronchiolitis obliterans with organizing pneumonia, GPA=granulomatosis with polyangitis (formerly known as Wegener's), EAA=extrinsic allergic alveolitis, DAD/DAH=diffuse alveolar damage/diffuse alveolar haemorrhage

Discussion

This paper reports on the first survey of the prevalence of lung diseases on the Caribbean island of Aruba. Asthma (22%) and sleep disorders (20%) appeared to be the most prevalent diagnosed lung diseases at the outpatient clinic of the Department of Respiratory Medicine of the Dr. Horatio E. Oduber Hospital, the only outpatient clinic on Aruba. A diagnosis of ILD was established in 4.4% of the cases, with NSIP (28%), sarcoidosis (18%) and IPF (16%) being the most frequent. The patient population of the outpatient clinic of lung diseases generally tended to be obese. OSAS appeared to be a major problem on Aruba, and patients with OSAS were even more obese than patients with other lung diseases.

Obesity

On average, the lung patient population we studied appeared to be obese (BMI≥30 kg/m^2), with a high mean body mass index (BMI) of 31.6 kg/m^2 (9). The women were significantly heavier than the men. Obesity has been recognized as a major public health problem by the World Health Organization (WHO) (10), imposing an increasing burden on health care systems and driving up health care costs (11, 12). The prevalence of obesity has increased dramatically worldwide, predisposing individuals to an increased risk of morbidity and mortality due to cardiovascular disease and type 2 diabetes (13), dementia, as well as sleeping problems, including OSAS (14, 15). Obesity is a major risk factor for OSAS (16-18). Obesity can also cause obesity hypoventilation syndrome (OHS), which is known to carry an even higher mortality risk than OSAS (19). Other respiratory illnesses, such as aspiration pneumonia, pulmonary embolism, chronic bronchitis, asthma (13), and even COPD (20, 21) are also linked to obesity. Abdominal obesity in particular compromises lung mechanics by restricting lung volumes, reducing chest wall compliance, and attenuating respiratory muscle efficiency. Obesity may also play a significant role in the pathogenesis of lung diseases by producing pro-inflammatory mediators in adipose tissue, which contributes to a low-grade inflammation status and influences susceptibility to pulmonary infections, enhances pulmonary inflammation associated with environmental exposure, and exacerbates airway obstruction in preexisting lung disease (13). Obesity is associated with a higher risk of asthma, especially in women, and is also associated with higher odds of poorly controlled and high-risk asthma (22). It could be that the high mean obesity rate of the lung patient population on Aruba, especially among women, has a negative influence on the treatment success, exacerbation control, and prevalence of lung diseases and sleep disorders.

Sleep disorders

Sleep disorders, especially OSAS, appeared to be common among lung patients on Aruba, and these patients were found to have a higher BMI than the overall study population, with a mean value of 38.1. OSAS is associated with obesity (23), cardiovascular problems (23) like high blood pressure (23, 24), as well as an increased risk of traffic accidents (25, 26). Some studies have suggested bidirectional relationships between OSAS and diabetes (23, 27). In addition, shorter habitual sleep duration is associated with depressive symptoms (28). Sleep-disordered breathing is associated with a higher all-cause mortality (29), especially among middle-aged men, due to coronary artery disease (30). In this study we found that OSAS was more prevalent among men than women, which was also found in other studies (31). This difference cannot be attributed to higher BMI, since the women with OSAS in our population were significantly heavier than the men. A possible explanation is that studies have shown that men are more vulnerable to upper airway collapse (32). We suspect that the prevalence of OSAS on Aruba could be even higher than what was found in this study, because OSAS is still known to be an underdiagnosed disease (33).

There are various treatment options for OSAS, including Mandibular Repositioning Appliance (MRA) (34), Continuous Positive Airway Pressure (CPAP) (35), weight loss (even for patients with comorbidity like diabetes mellitus) (36, 37), and exercise. Exercise is known to reduce the severity of OSAS (38), and some studies suggest that exercise alone reduces OSAS severity even without significant weight loss (39). Lifestyle modifications and dietary weight loss will play an important role in the future management of OSAS (40, 41), including on Aruba. One of the problems impacting on the

delivery of the best healthcare to OSAS patients is fragmentation of services and treatments. Mechanical therapies are implemented by sleep (lung) or dental specialists, while lifestyle modification is usually managed by other teams (42). Some of the patients with OSAS and obesity suffer from obesity hypoventilation syndrome (OHS) (43), the prevalence being estimated at between 10% and 20% of patients referred to sleep laboratories, and rising to 20-30% or more among patients already diagnosed with OSAS. Whereas most of the patients suffering from OHS and OSAS can be treated with CPAP, some need more drastic treatment in the form of noninvasive ventilation (NIV). Compared to CPAP, NIV is more expensive and more complex. Moreover, residual respiratory events occur frequently in OHS patients treated with nocturnal NIV. Additional attention is required to ensure treatment efficacy and to avoid machine-related undesirable respiratory events (44).

Interstitial lung diseases

To date, ILDs are orphan diseases, with a low prevalence. ILDs are characterized by variable etiologies, clinical presentations, radiographic patterns and histological appearances. The majority of the cases are idiopathic, but ILDs can also be caused by many exogenous factors, such as medication, connective tissue diseases and organic dust (45). The available data on the prevalence of ILDs are generally scarce and even less is known about the prevalence of ILDs in countries in the Caribbean area. The study population of patients on Aruba we studied included 104 persons (4.4%) suffering from ILD. The most frequently diagnosed ILDs were NSIP (29, 28%), sarcoidosis (19, 18%), and IPF (17, 16%), while some less common causes were also identified, such as a case of DAH associated with dengue fever. We found an increased prevalence in women (61%) compared to men (40%). Similar observations have been reported in a study from India (46), a study from Greece (47) and a study from Guadeloupe (48). US studies have reported prevalence's of 80.9 per 100 000 among men and 67.2 per 100 000 among women (49). In Guadeloupe, a prevalence of sarcoidosis of 21.9/100 000 per year was found, with mostly multiple organ involvement and a high rate of initiation of systemic treatment (48). The overall prevalence of ILDs could be even higher, because sarcoidosis is only one disease from the group of ILDs. In countries with a high prevalence of tuberculosis (TB), ILDs are often misdiagnosed as TB (46). Tuberculosis is also regularly found on Aruba, as we found in the present study. No hard numbers on the prevalence of ILDs in the Netherlands are present, but the prevalence of ILDs are estimate at 100 per 100,000 inhabitants, with more people diagnosed with sarcoidosis in the Netherlands (40/100,000) and equal, 15/100,000 with IPF. This would be comparable to the prevalence of ILDs on Aruba. Moreover, we have to take into account that ethnicity on Aruba is highly diverse. It is tempting to speculate that this might influence the prevalence and clinical presentation and manifestation of ILDs, especially compared to the Netherlands. While Aruba is a constituent country of the Kingdom of the Netherlands, the ethnic diversity of the island is different, so the number of cases diagnosed with ILD might be underestimated. Many ILDs still remain undiagnosed (49). Furthermore, ILDs can present in a more severe form in part of the Aruban population, because of the percentage of Afro-Caribbean patients, in whom ILDs tends to have a more severe presentation , with multiple organ involvement (48).

Decompression sickness

The reason why we did not find patients suffering from decompression sickness in this study is the absence of a hyperbaric chamber on Aruba. Patients with suspicion or symptoms of decompression sickness are immediately transported to the airport from the emergency room to be flown to Curacao for treatment.

Management

As a result of this study, several management measures have been undertaken on Aruba. Together with the one health insurance company on the island, the Dr. Horatio E. Oduber Hospital has started multiple initiatives to improve the management of pulmonary health care on Aruba.

Obstructive sleep apnea syndrome

Polygraphy and polysomnography are now available, with weekly multidisciplinary consulta-

tions for difficult cases and pulmonologists having weekly meetings with the OSAS nurses for optimal configuration of CPAP and biphasic positive airway pressure (BIPAP) equipment. Furthermore, monthly meetings are held between pulmonologists, ear, nose and throat specialists and orthodontists, to overcome the fragmentation of services and treatments and to achieve an optimized multidisciplinary approach to OSAS and other sleep disorders. NIV home treatment is not available on Aruba. Plans to make this available are being discussed, but because of the costs and complexity they have not yet been realized.

Interstitial lung diseases

In addition to the already available lung function tests, bronchoscopy and HRCT, additional specialized lung surgeons have been brought in for open lung biopsies. Furthermore, biologicals like ritiximab, infliximab and adalimumab are now available. Patients with IPF have now access to new antifibrotic drugs like pirfenidone, and efforts are being made to make nintedanib available.

Decompression sickness/hyperbaric chamber

The pulmonologists are already certified for diving medicine, and at the time of writing, negotiations about investing in a hyperbaric chamber on Aruba are at an advanced stage.

Recommendations

The health care industry is constantly changing. Significant changes derive from many sources, including legislative and policy initiatives; international as well as domestic economic and availability developments; demographic and lifestyle shifts; technological advances and fundamental health care delivery options. The health care system on Aruba will have to effectively manage these changes and new developments. Although one of the limitations of this study was its retrospective nature, our survey identified some important topics for the population of Aruba.

Our survey of the diversity and prevalence of various lung disorders was also intended to support the importance of strategic management of domestic health care facilities on Aruba. Planning investments for the future requires knowledge of the prevalence rates of different types of lung diseases, in order to assess if it would be cost-effective and necessary to optimize diagnostics for these diseases on Aruba, or whether some diagnostics could better be outsourced or optimized using telemedicine (50).

This study has shown that obesity is a major problem on Aruba, and the lung patient population tends to be obese. There are multiple interventions to treat obesity. Possible treatments include weight loss counseling (51), and diets and physical exercise to lose weight and achieve favorable changes to cardio-metabolic risk factors (52). Another option is the use of smartphone applications (53). A key aspect of the management of the global obesity epidemic is prevention, starting at a young age (54). Multiple players (including governments, international organizations, the private sector, and civil society) need to contribute complementary actions in a coordinated approach. Priority actions include policies to improve food availability and the built environment, cross-cutting actions (such as leadership, health-in-all policies, and monitoring), and much higher funding for prevention programs (55).

E-health can be a useful tool on Aruba. Since Aruba is a small island, reference to another (university) hospital is more difficult than in other countries. An option could be to communicate with hospitals in other countries for peer consultation using e-health. Telemedicine can also be an option for patients who have been to other countries for treatment and need follow-up (50).

Home NIV should become available on Aruba. So far, costs and complexity of organization have prevented this, but it could greatly assist health improvement (44).

Conclusion

Obesity and OSAS appeared to be major problems on Aruba, and patients with OSAS are even heavier than those with other lung diseases. Increased awareness, education, and diagnostic facilities are required to prevent and diagnose obesity, OSAS, and OHS at an early stage. Non-specific interstitial pneumonia (NSIP), sarcoidosis and idiopathic pulmonary fibrosis (IPF) were the most frequently diagnosed ILDs on Aruba. Optimization of

the management of ILD is warranted, considering new treatment options for ILD, especially IPF. Future prospective studies are needed to fine-tune these preliminary recommendations to improve health care and education.

Acknowledgement

This study was supported by a grant of the ild care foundation www.ildcare.nl.

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