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Research Article

Pulmonary Pathologies of the Elderly: Diagnostic and Evolutionary Particularities in the Geriatric Department of the FANN University Hospital in Dakar

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Abstract

Introduction: The loss of cellular homeostasis induced by advanced age (over 65 years) and some treatments promote the development of various lung diseases in association with comorbidities and poor socioeconomic conditions.

The objective of this study was to describe the prevalence, clinical and evolutionary characteristics of pulmonary pathologies of elderly subjects hospitalized or not in the geriatric department of the CHU de Fann.

Materials and Methods: This was a retrospective study of 52 cases of pulmonary pathologies of the elderly subject over a period of 18 months (May 1, 2019 to October 10, 2020) at the Geriatrics Clinic of Fann.

Results: The prevalence of lung pathologies was 28.26%. The average age was 81.86 years and the 81-90 age group was the most represented. The sex ratio was 1.08. The most common comorbidities were hypertension (61.5%), diabetes (19.2%) and stroke (11.5%). The notion of polymedication was present in 17.3% of cases with an average of 2.2 drugs taken per day. Regarding lifestyle, 57.6% of our patients were sedentary, 17.3% smoking and 11.5% ethyl. The standardized geriatric assessment concluded that 50% of our patients were undernourished in 63.4%, confused in 13.4%, depression in 11.5%, immobilization in 26.9% and cognitive impairment in 15.3%. Community-acquired acute lung disease was the most common lung disease (50%), followed by SARS COV2 pneumonitis (15.3%), inhalation pneumonitis (7.6). The average length of hospital stay was 6 days and mortality was 11.5%.

Conclusion: In the elderly, lung diseases are common and serious. Their management must take into account the complexity involved in aging. The respiratory pathology of the elderly is in our context dominated by acute community pneumonitis, followed by SARS COV2 pneumonitis and inhalation pneumonitis.

Keywords: Elderly; Lung Disease; Geriatrics; Dakar

Introduction

Aging is a multisystem process that leads to a loss of cellular homeostasis followed by susceptibility to disease [1]. According to recent definitions, the person enters a senile age after 65 years. This phenomenon of aging is very individual and differs from one subject to another with regard to its rate and its affected systems and organs [2]. This aging does not spare the respiratory system, which undergoes a progressive involution with age, resulting in

anatomical and functional changes that are exerted at all levels. Knowledge of these changes in relation to advancing age is a medical issue of great importance in order to distinguish the effects of aging from those of diseases [3]. The most common pathologies at this age are respiratory tract infections, chronic obstructive pulmonary diseases and bronchial asthma [2]. Recently (December 2019) covid-19 is causing a new viral pneumonia [4]. However, the evolution of these pathologies may be different in the elderly, not only because of the physiological process of aging, but also because of frequent comorbidities [2]. In Senegal, few studies have been conducted on the respiratory pathology of the elderly. The objective of our study is to determine the profile, prevalence, clinical and paraclinical particularities and evolution of these respiratory pathologies in the elderly in order to identify therapeutic particularities.

Materials and Methods

This is a retrospective, descriptive and analytical study, spread over a period of 18 months (May 1, 2019 to October 10, 2020) on 52 elderly subjects with pulmonary pathology. Patients with any lung pathology that motivated hospitalization or not and whose records were available and usable were included in our study. The parameters studied were age, sex, history, family situation, reasons for hospitalization, general condition at admission, functional signs, standardized geriatric assessment, pleuropulmonary examination, examination of other devices and systems, results (laboratory assessment and chest imaging) and evolution. The collected data was analyzed with SPSS software version 21.0.

Results

Out of a total of 184 elderly subjects, 52 met the study's criteria, a prevalence of 28.26%. Thus, the 52 patients concerned were aged 65 to 96 years with an average of 81.86 among whom there were 27 men, a sex ratio of 1.08. The majority of our patients lived in families 46 (88.5%) cases, 3 (5.8%) cases lived alone and the remaining 3 (5.8%) had an unspecified family situation. More than half of our patients (53.84%) were retired, 26.9% were not working, and 19.2% had an unspecified job. In our study, the majority of our patients were cared for by their immediate family: 28 (53.8%) cases, 9 (17.3%) cases were financially autonomous and the remaining 9 benefited from the advantages of a structure (insurance, mutual). The majority of these elderly subjects were married: 32 (61.5%) cases, 11 (21.2%) were widowed, 1 (1.9%) patient was single and the remaining 8 (15.4%) had an unspecified marital status. High blood pressure (hypertension) was the most common comorbidity (32 cases), followed by diabetes (10 cases), stroke (6 cases), heart disease (6 cases), neoplasia (2 cases), tuberculosis (2 cases), asthma (2 cases), nephropathy (1 case) and COPD (1 case). The notion of polymedication was found in the minority of our patients (17.3%) and the number of drugs per day was 2.2. In our series 40.38% of cases had a history of surgery: digestive surgery was the most common (6 cases), followed by gynecological and urological surgery (4 cases each), ophthalmological and orthopedic surgery (3 cases each) and cardiovascular surgery 1 case. Regarding lifestyle, 56.7% of cases were sedentary, 17.3% of cases were smoking and 11.5% of cases were ethyl. In our study, 84.6% of cases were admitted directly to our service, 15.38% of cases were admitted by referral from different health facilities. Cough was the most common reason for consultation 15 (28.8%) cases, followed by deterioration of general condition 14 (26.9%) cases, fever 8 (15.3%) cases and refusal to eat 6 (11.5%) cases. Table 1 shows the distribution of the different reasons for consultation. Cough was also the most common functional sign 30 (57.69%) cases followed by fever 24 (46.20%) cases, sputum 19 (36.53%) cases, dyspnoea 16 (30.76%) cases, impaired consciousness 13 (25%) cases, chest pain 6 (11.50%) cases, confusion and immobility accounted for 5 (9.60%) cases each. A standardized geriatric assessment revealed undernutrition in 50% of cases. The MNA score was achieved in 46% of our patients showing: 3 cases of normal nutritional status, 20 cases at risk of undernutrition and 2 cases of proven undernutrition. Albuminemia was performed in 6 patients demonstrating undernutrition. The assessment of autonomy found a loss of functional independence in 33 (63%) cases. Among these patients, the ADL (activities of daily living) score performed in 19 patients showed: 1 case of retained autonomy, 8 cases of loss of functional independence and 10 cases of severe loss of independence; and the IADL instrumental activities of daily living score) performed in 9 patients showed 09 cases of loss of instrumental autonomy. A confusional state was present in 7 (25%) patients, CAM (confusional assesment method) performed in 23 (44%) patients was negative in 70% of cases and positive in 30%. Six patients had depression, 15 patients had immobilization syndrome, 8 patients had cognitive impairment, and 29 patients had frailty syndrome. In our study general condition was reported

in all patients and 49 (94.2%) patients had impaired general condition (stage 3 and 4 WHO). On pleuropulmonary examination, the majority of our patients had crackling rales 43 (82.69%) cases, 25 (48.07%) patients had pulmonary condensation syndrome, 6 patients had bronchial rales, 4 patients had pleural effusion syndrome, and 1 patient had sibilant rales. Table 2 shows the various abnormalities of the physical examination. The count performed in all our patients showed anaemia in 29 cases and hyperleukocytosis in 27 cases; fifty patients had positive CRP, 14 patients had water-electrolyte disorders with the most frequent hyponatremia (5 cases) and 23 of our patients had elevated creatinine. In our series 42 patients received chest X-rays, 20 of whom showed opacity and 18 patients underwent chest computed tomography (CT) scans showing 8 cases of Covid (Figure 1). Table 3 shows the distribution of imaging results (X-ray and chest CT) None of our patients received bronchoscopy. In our series acute community pneumonitis was the most common pathology 26 (50%) cases, followed by sars COV2 8 pneumonitis (15.3%) cases, innhalation pneumonitis 4 cases (7.6%), 3 cases of pleuropneumonitis, 3 cases of pulmonary metastasis, elsewhere there were 3 cases of COPD, 3 cases of pulmonary tuberculosis, 1 case of pulmonary cancer and 1 case of pleurisy. The evolution was favourable in 39 (75%) patients and inpatient patients in 7 (13.4%) patients in whom care was continued at home and six patients had died. Our average length of hospital stay was 6 days with extremes ranging from 2 to 12 days.

Signs	Staff	Percentage
Cough	15	28,8%
Refusal to eat	6	11,5%
Deterioration of general condition	14	26,9%
Fever	8	15,3%
Diffuse cluster headaches	5	9,6%
Chest pain	5	9,6%
Confusion	5	9,6%
Dyspnoea	5	9,6%
Respiratory distress	4	7,7%
Undernutrition	3	5,8%
Altered consciousness	3	5,8%
Total	52	100%

Table 1: Distribution of Reasons for Consultation.

Signs of clinical examination	Staff	Percentage
Altered consciousness	15	28,8%
Clinical anemia	10	19,2%
Dehydration	8	15,4%
Oral candidiasis	3	5,8%
Temporary-spatial disorientation	3	5,8%
Tachycardia	3	5,8%
Auscultatory arrhythmia	2	3,8%
Haematuria	2	3,8%
Joint stiffness	2	3,8%
Left pyramidal syndrome	3	5,7%
MID Anesthesia	1	1,9%
Ankylosis of the limbs	2	3,8%
Positive Babinski's sign	1	1,9%
Allergic conjunctivitis	1	1,9%
Dorsal kyphosis	1	1,9%
Bilateral motor deficit	2	3,8%
Severe pain in the right leg	1	1,9%
Bedsores	2	3,8%
Muscle weakness	1	1,9%
Enlarged throat	1	1,9%
Hallucination	1	1,9%
Hippocratisme digitale	1	1,9%
Hypertonia of MSD and MID	1	1,9%
Enlarged prostate	1	1,9%
Hypoaesthesia of the left MI	1	1,9%
Muscle hypotrophy	1	1,9%
ICD	1	1,9%
Jaundice	1	1,9%
Distension abdominal	2	3,8%
Limitation of hip movement	1	1,9%
Inguinal lymphadenopathy	1	1,9%
Impossible to walk	1	1,9%
Dullness of the flanks	1	1,9%
Edema of the lower limbs	1	1,9%
Left facial paralysis	1	1,9%
Paraplegia	2	3,8%
Unperceived peripheral pulse	1	1,9%
Ptosis of the right eye	1	1,9%

Immobilization syndrome	1	1,9%
Systolic murmur at all foci	1	1,9%
Right deafness	1	1,9%
Behavioural disorder	1	1,9%
Swelling of the left shoulder	1	1,9%
Xérose diffuse	1	1,9%

Table 2: Distribution by physical examination abnormalities.

Chest CT Results	Staff	Chest X-ray results	
Lesion compatible with SARS COV2 involvement	8 (27,8%)	Alveolar opacity	20(47,6%)
Pulmonary embolism	2 (23,8%)	Interstitial opacity	10(23,8%)
Appearance of a tuberculosis miliary	2 (9,5%)	Alveolo-interstitial opacity	4 (9,5%)
Aspect of bilateral pleuropneumonitis	1 (7,1%)	Costo-diaphragmatic cul de sac filling	3 (7,1%)
Aspect in favor of a pulmonary broncho tumor	1 (4,7%)	Fluid pleural effusion	2 (4,7%)
Progressive excavated lung disease	1 (4,7%)	Military image	2 (4,7%)
Pulmonary heart	1 (2,3%)	Balloon release image	1 (2,3%)
Right alveolar condensation	1 (2,3%)	Cardiomégalie	1 (2,3%)
Left pulmonary condensation	1 (2,3%)	Opaque mass at the base of the right lung	1 (2,3%)
Emphysema	2 (4,7%)	Normal	2 (4,7%)
Bilateral apical emphysema	1		
Bilateral pleural effusion	1		
Posterobasal alveolar focus	1		
Balloon release lung injury	1		
Lung metastasis	2		
Micronodule	2		
Bilateral pulmonary nodule	1		
TOTAL	18	TOTAL	46

Table 3: Distribution of CT and Chest X-ray results.

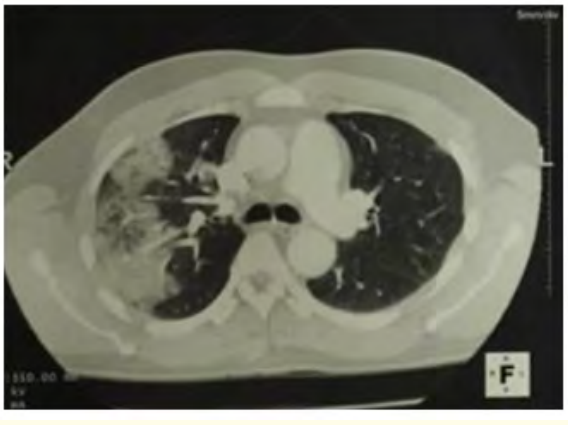

Figure 1: Showing covid 19 in a 65-year-old patient.

Discussion

Elderly people frequently present to health workers with respiratory problems [5]. Few studies on lung pathologies have been carried out in Senegal. In our series over an 18-month period, 52 cases were diagnosed out of a total of 184 elderly subjects, a prevalence of 28.26%. In the literature several authors have done studies on other pathologies and report data that are lower than our results: Tetchi., *et al*. [6] in Abidjan noted 9.6% of lung pathologies in a study of 490 subjects over 60 years of age. In France, Cartron [7] had a prevalence of 13.6% and Trognon [8] noted a prevalence of 8%. In our series the average age was 81.8 years (65 to 96

years). Our figures corroborate with the data from the literature: Curec [9] had a mean age of 80.9 years and Cartron [7] had a mean age of 84.6 years. However, our figures are higher than those of studies done in Senegal and Africa: Faye., *et al*. [10] in Senegal had an average age of 74.7 years. Tetchi., *et al*. [6] A abijan had an average age of 72.6 ± 8.4 years. Diabaté., *et al*. [11] In Côte d'Ivoire had an average age of 71.8 years. Our high averages compared to these studies could be explained by the fact that our service is a specialized geriatric service exclusively for elderly patients. Despite this, our figures remain close to those seen in Western countries, where the population is much older. Our sex ratio was 1.08. This male predominance, to a lesser extent, was not found in Cartron's results. [7] and Curec [9], which had found female predominance at 59% and 70% respectively. In our HTA series (61.5%), diabetes (19.23%) were the most frequently observed comorbidities. Our results are superimposed on data from the literature: In the study by Tetchi., *et al*. [6] in Abidjan, hypertension (52.8%) and diabetes (22%) were the most common comorbidities. Cartron [7] had found a prevalence of some comorbidities similar to ours, including diabetes 27.9%. The high prevalence of hypertension and diabetes in our series could be related to the high prevalence of these two pathologies in the general Senegalese population. In our study only 17.3% of cases had a notion of polymedication and the number of drugs per day was 2.2. Contrary to our results, other authors find higher figures: APETI., *et al*. [12] in Lomé, there were an average of 8.5 drugs taken daily. In Africa we do not have enough data on polymedication in the elderly, unlike in the West where many studies carried out in Europe find its high incidence including: Cartron [7] in France had 83.7%, Mayor [13] in France had 73.8% and Nobili., *et al*. [14] in Italy noted polymedication in 51.9% of cases. Foucher [15] reported an average of 6.4 at hospital entry and 6.7 at discharge. The challenge in geriatrics is to reduce polymedication. Our study population was marked by a sedentary lifestyle noted in 57.6% of cases. In a study by Coume., *et al*. [16] In 2014 80.8% of patients were sedentary. In France, the National Health and Nutrition Study (ENNS) conducted in 2006-2007, noted that 33.5% of men and 34.5% of women were sedentary. Smoking was found in 17.3% of our patients. Faye., *et al*. [10] in Senegal found smoking in 9.1% of cases and Klein., *et al*. [17] In France smoked in 4.6% of cases. These figures suggest the importance of strengthening the fight against cardiovascular risk factors through education and awareness of the population in general and the elderly in particular. Aging leads to alterations in the symptomatology of many pathologies [2]. In our study, the reasons for consultations were dominated by cough (28.8%), deterioration of general condition (26.9%), followed by fever (15.3%), and refusal to eat (11.5%). Our figures corroborate those of Cartron [7] in France who had found that the main reasons for emergency room admissions were cardiorespiratory (33.2%) with a significant share of dyspnea (20.5%), and general signs at 19.9%. Unlike us, Dodier [18] had a predominance of neurological motifs (impaired consciousness, confusion, neurological deficit) at 33.3%, followed by falls (31.7%). Note that in geriatrics, semiological atypia and lack of specificity of certain symptoms could explain the polymorphic clinical presentations and the frequency of certain non-specific signs such as alteration of the general condition and delirium syndromes. In our series, the standardized geriatric assessment concluded that undernutrition was present in 50% of our patients, functional dependence in 63.4%, confusion in 13.4%, depression in 11.5%, immobilization in 26.9% and cognitive impairment in 15.3%. However, the tools through which EGS is conducted were little used, in this case, the MNA score was only used in 46% of patients, ADL in 36%, IADL in 17%, CAM in 44%, GDS (Geriatric Depression Scale) in 9%, mini GDS in 3%. This rather low use could be explained by the difficulty of using EGS in hospitals and acute geriatrics, especially in an aphasic or mute patient, or with a sensory disability (deafness).

Functional status (Autonomy): Umba Kuanga [19] in Kinshasa had found a loss of functional independence in 29% of people for basic daily living activities and 39% for instrumental life activities. Berthe [20] in Burkina Faso had found a frequency of 32%.

Nutritional status: In her study, Umba Kuanga [19] found that 79% of subjects were malnourished (24% malnourished, 55% at risk). Diagne., *et al*. [21] in Dakar had a percentage of 58.2% (27.2% at risk of undernutrition and 31% malnourished) and a multicenter retrospective study including 4507 patients from 12 countries in different settings made by Kaiser., *et al*. [22]. showed an overall prevalence of undernutrition at 22.8%.

Cognitive and thymic status (cognitive impairment and depression) Umba Kuanga [19] found that 89% of patients had cognitive impairment. Mbelesso., *et al*. [23] in the Central African Republic had found a prevalence of 37.5%.

In our series, acute community lung disease (ACG) was the most common pathology (50%), followed by SARS COV2 pneumonitis (15.3%), inhalation pneumonitis (7.6%). Our results corroborate with data from the literature, particularly those of BEMBA., *et al*. [24] in Brazaville where acute community lung disease was the most common pathology (41.7%). Tetchi., *et al*. [6] in Abidjan had a clear predominance of bacterial pneumonitis (59.6%), followed by acute bronchitis (12.8%) and asthma (10.6%). In France Cartron [7] found that respiratory infections were the most common among the pulmonary pathologies encountered (43.1%) followed by pulmonary embolisms (31.3%), respiratory tract tumors were the least common with a percentage of (1.8%). There is a clear predominance of infectious pathology, among which CAP represents the first infectious pathology in elderly subjects hospitalized for pulmonary disease. Several studies have made it possible to assess the role of age among patients hospitalized for pneumonia [25]. Indeed, according to these studies, respiratory infections are responsible for about 50% of hospitalizations for infectious diseases and about 50% of deaths among hospitalized elderly subjects. Multiple general and specific factors contribute to explain the high frequency of respiratory infections in the elderly: many chronic or degenerative diseases alter natural defenses; Some treatments are likely to accentuate this alteration of defenses (corticosteroids and immunosuppressants, sedatives, morphine or neuroleptics) [26,27]. At the end of December 2019, a series of cases of viral pneumonia caused by a novel coronavirus (SARS-coV2 or covid-19) appeared in Wuhan, and became an «international health emergency» at the end of January 2020. [4,28,29]. Its most typical clinical presentation of COVID-19 is febrile respiratory syndrome with dry cough, dyspnea, fatigue and myalgia. While in elderly subjects one may have semiological atypia of the disease such as confusion, alteration of the general condition or geriatric syndromes. About 15–20% of cases are severe and 2–3% are fatal [29-31]. The reference diagnostic method is laboratory research for viral RNA by RT-PCR (reverse transcriptase – polymerase chain reaction) from nasopharyngeal swabs [fang, wang, 153] [32-34]. The chest CT scan has quickly established itself as an interesting diagnostic tool, given the often quite characteristic presentation of COVID-19 lesions [35]. The most characteristic scannographic abnormalities of COVID-19 pneumonia are frosted glass (about 80% of cases), multifocal, bilateral, asymmetrical. Involvement predominates classically in the peripheral, posterior and basal regions [36–38]. Other signs have been reported as the presence of fine cross-linking, peribronchovascular thickening, peri or intralesional vascular dilations or signs of parenchymal distortion [38,39]. The evolution in our study was favorable in 39 (75%) cases. Nevertheless, we noted six deaths or 11.5%. Our data corroborate those of PARNEIX [40] In France, which in its study on becoming elderly people hospitalized in internal medicine found a mortality of 11.6%. In contrast to our results, BEMBA., *et al*. [24] in Brazaville had a mortality of 23.68%. Faye., *et al*. [10] in Dakar in its study concerning the anemia of the subject over 65 years of age hospitalized in internal medicine had found a mortality rate of 19.7%. %). Tetchi., *et al*. in Abidjan had a death rate was 35.4% in patients over 65 years of age. This hospital mortality of the elderly is high in Sub-Saharan Africa could be explained on the one hand by a delay in diagnosis because patients are often seen late but also by the lack of adequate medical equipment in our hospital structures. On the other hand, the high cost of hospital care, complementary explorations and treatments remain an obstacle to access to care in our country.

Conclusion

Lung diseases are more common and more severe in elderly patients. the respiratory pathology of the elderly is in our context dominated by acute community pneumonitis, followed by SARS COV2 pneumonitis and inhalation pneumonitis Their management must take into account the complexity involved in aging: physiological changes, polypathology, polymedication and fragility. The geriatric approach makes it possible to understand this complexity in order to propose the most appropriate exploration and treatment strategies.

The limitations of our study were as follows

- Information bias inherent in the mode of retrospective collection, with missing data, variable in proportion according to the files.
- Monocentric hospital study that does not reflect the actual epidemiology of pulmonary pathologies in the elderly in Senegal, the ambulatory aspect is not treated.

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