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Frailty Syndrome and Its Association with Geriatric Syndromes in Palliative Care

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Keywords

Geriatric Syndromes, psychological, Palliative Care.

Introduction

Aging Population

The World Health Organization (WHO) defines individual aging as a process that affects all people and changing permanent contextual reality [1]. In this sense the actual aging population and the problems involved generate new challenges in health care. It has been projected that in the resulting period between 2015 and 2050, the percentage of worldwide habitants over the age of 60 years, will increase from 12 to 21% [2,3].

Due to this context it has been reported that this progressive lifespan has favored an increase in the prevalence of chronic- degenerative diseases, complex plural pathological conditions [4] and the coexistence of one or more diseases reaches a prevalence close to 30% in older adults. Likewise, chronic-degenerative and metabolic diseases, cancer and organic insufficiency are associated with high mortality rate and the need for increased medical attention. This panorama of concern of the complexity and progression of medical attention requires special knowledge in order to prevent major deterioration of the quality of life, premature death and to protect adequate palliative attention [5-8].

Geriatric Functionability

Aging is characterized by a decrease in functional capacity, considered a sensitive indicator that reflects the ability of the elderly person to independently or autonomously carry out basic daily living activities. (DLA) In particular, self-care and autonomy in feeding, continence, use of transportation, using the bathroom, dressing and bathing; in addition to instrumental daily living activities such as cooking, shopping, house cleaning, using the telephone, doing laundry, traveling, taking medications and managing personal expenses. It has been reported that about 25% of people over 65 years of age require help to perform basic living activities, increasing to 50% in people over the age of 85.

Geriatric Syndromes are frequent clinical disorders in older adults, used to describe non-specific clinical conditions in this population group. The presentation of a geriatric syndrome indicates the accumulation of deficiencies in multiple systems and the inability to compensate for them. It has been reported that the underlying etiology for the development of these syndromes is multifactorial and involves identifiable stressors and age-related risk factors that together damage various organ systems and produce a devastating impact on the individual's quality of life. The progression of which produces significant disabilities and the beginning of the "dependency cascade". It has been considered that in this population, geriatric syndromes are predictors of frequent hospitalizations, catastrophic expenses and increased general mortality, considering that their lack of detection as a predictor of poor results [9,10].

On the contrary, early detection allows for comprehensive, integrated and systematic patient-centered care, allowing for a considerable improvement in health care outcomes. Therefore, the purpose of this report is to describe the association of frailty with geriatric syndromes such as falling down, decreased functional capacity, sarcopenia, visual and or auditory sensory deficits, urinary and fecal incontinence, constipation, polypharmacy, depression and cognitive impairment [11-13].

Frailty Syndrome

Frailty is considered a geriatric syndrome characterized by functional deterioration and a high vulnerability to clinical stressors such as diseases, injuries or surgeries, which promote a dynamic state of instability in the elderly person. They experience deterioration in one or more domains of health (physical, functional, psychological or social). The syndromes developed from the decrease in physiological reserves in multiple organ systems, due to an intrinsic aging process or due to an accumulation of unrelated comorbidities such that when these reserves decrease, minor urgencies can cause serious complications [14-16]. It has been reported that the cycle of frailty can be initiated by any of the clinical exposures that make up the syndrome (weight loss, feeling of exhaustion, loss of strength, decreased walking speed, and or decreased activity overall), which precipitates a vicious circle that results in the individual. Weakness has been observed to be the initial and most common manifestation of the syndrome. Alterations in hearing, vision, mobility, psychological, cognitive, nutritional problems and or changes in the pattern of social activity and daily life are considered a warning of vulnerability and eventual development of frailty. Early detection allows simple and effective interventions to prevent the development of the syndrome [17].

Frailty, Geriatric Syndromes and Palliative Care

Projections estimate that in the coming decades, the majority of doctors will care for seriously ill older people with multiple diseases, long-term illness and acute exacerbations, intermittent and interspersed with periods of relative stability [18]. The care of geriatric syndromes can be considered a challenge due to the deficit in diagnosis, lack of timely referral to specialized sites, the presence of sensory disabilities and correct care [19].

Although there are no specific guidelines regarding when to ´provide palliative care to frail older patients, it has been proposed that palliative care be provided to frail older patients with continued functional impairment and uncontrolled symptoms with greater use of health services. This modality facilitates communication with patients and their family. To establish goals of care and treatment preferences, to improve pain and symptom control, to address psychosocial and spiritual needs, to plan care in advance, to meet the needs of the caregivers throughout the illness until the end of life [20].

The frail palliative patient requires a comprehensive, integrated, multidimensional and multidisciplinary geriatric evaluation that include validated tools to evaluate specific geriatric areas that are determining factors in the treatment of older adults [21]. The current trend is to integrate palliative care into geriatric care for the growing number of older people who live with geriatric syndromes and their frequent association with various degrees of frailty, multimorbidity or even those who are at the end of their lives [22,23]. In this area, early diagnosis of frail and older patients is desirable in order to address early the causes that lead to greater vulnerability, the burden of symptoms, individualized treatment plans, and preserve the autonomy and dignity of patients [24,25]. Based on the above, we position ourselves to the objective of determining the detection of frailty used in the clinical setting, and evaluating the risk factors of geriatric syndromes in the outpatient clinic of a healthcare hospital in Oaxaca, Mexico.

Material and Methods

Designs and Samples

Prior authorization from the Bioethics Hospital Committee and the signing of the informed consent. A non-probabilistic sampling was carried out, including 99 patients over 65 years of age of both sexes, who attended the Geriatrics outpatient clinic of the President Benito Juarez Regional Hospital but excluding patients who presented delirium, amputation of a pelvic limb and those suffering from Parkinson's disease.

Procedure and Instruments

1. The socio demographic profile was obtained through a questionnaire that included: sex (man or woman); age (in full years); marital status (with or without a partner) and level of education.
2. General medical history; presence of chronic diseases, systemic arterial hypertension, type 2 diabetes mellitus, stroke, chronic kidney disease (CKD), heart failure, arrhythmias and cancer.
3. Comprehensive geriatric assessment: a) functionality (Barthel, Lawton and Brody index), sarcopenia (calf circumference), the presence of visual and auditory sensory deficits; hearing through the whisper test which determined: hear clearly or not hear clearly; visual deficits reported be patients, urinary and /or fecal incontinence, fall syndrome (2 or more falls in a year and/or a fall that has required hospitalization or caused a sequel), polypharmacy (taking 5 or more types of medications). b) Mental sphere, Mini mental examination for patients with complete education and Pfeiffer questionnaire for people with low education. The affective area (depression) using the abbreviated 5-point Yesavage scale.

The presence of the most frequent geriatric syndromes in the hospital outpatient clinic was evaluated: Functional alteration, immobility, sarcopenia, visual, auditory and or both sensory deficits, urinary, fecal and or both incontinence, constipation, polypharmacy, depression and cognitive impairment. Frailty syndrome was determined using the FRAIL diagnostic questionnaire, with five dichotomous questions: fatigue in the last four weeks, resistance (difficulty climbing 10 steps), aerobic performance (difficulty walking 100 meters or 2 blocks without resting), comorbidity of more than five diseases, and 5% weight loss in the last year. People with 3 to 5 points were classified as fragile, 1 to 2 points as pre-fragile and 0 points without frailty or robustness.

Statistical Analysis

The results were coded in a SPSS version 29 and Excel 2016 spreadsheet and processed through univariate analysis, measures of central tendency and dispersion for quantitative variables and were expressed in frequencies and percentages. For the bivariate analysis, the non-parametric hypothesis test of X2 and Odds ratio (OR) was carried out and to determine the causal association, the

Spearman correlation was used.

Results

99 older adults completed the study, 71.7% women and 28.3% men; with an average of 82 years old. 62.6% were over 80 years old, 44.4% were widowed and 69.7% had a low education level.

Geriatric syndromes

4 of each patient presented cognitive impairment at the time of evaluation, 54% mixed sensory deficit, 52.5% ingested more than 5 types of medications (polypharmacy), 47.5& had mixed incontinence, 49.5% suffered from depression and 34% had sarcopenia (Table 1).

Table 1: Frailty Geriatric syndromes and comorbidity.

Geriatric syndromes			
	n %		**n %**
Sensory deficit: Visual Auditory Mixed	 23 (23.2) 9 (9.1) 54 (54.5)	Polypharmacy	47 (47.5)
		Cognitive impairment	43 (43.4)
		Urinary incontinence	39 (39.4)
		Constipation	36 (36.4)
Depression	49 (49.5)	Sarcopenia	34 (34.3)
Mixed incontinence	47 (47.5)	Fall syndromes	25 (25.3)
		Immobility	20 (20.2)
Frailty, comorbidity and 3 or more geriatric syndromes			
Frailty and comorbidity	**> 2 chronic diseases**		**> 3 geriatric syndromes**
	n %		n %
No fragility	14 (14.2)		15 (15.1)
Pre-fragility	28 (28.3)		28 (28.2)
Fragility	38 (38.3)		40 (40.5)

Frailty: Comorbidity and Frecuencias of Geriatric Syndromes in an Institutional Geriatric Service. Values expressed in frequencies and percentages.

In the same sense, it was observed that practically half of the population studied was independent for basic activities of daily living and half were partially dependent for instrumental activities (Table 2).

Frailty syndrome

23.3% were evaluated as robust, 17.2% women and 6.1% men. Of the 99 patients studied, 41.4% presented frailty and 35.7% pre-frailty. In general, greater fragility was associated with the female sex, in those over 81 years of age, with widowhood status and low education (Table 3).

Table 3: Bivariate analysis between sociodemographic characteristics and frailty.

Variable	Total n (%)	Robust n (%)	Pre-fragile n (%)	Fragile n (%)
Sex				
Women	71 (71.7)	17 (17.2)	24 (24.2)	30 (30.3)
Men	28 (28.3)	6 (6.1)	11 (11.1)	11 (11.1)
Age group				
60 – 70	9 (9.1)	5 (5.1)	3 (3)	1 (1)
71 – 80	28 (28.3)	10 (10.1)	10 (10.1)	8 (8.1)
81 – 90	50 (50.5)	8 (8.1)	20 (20.2)	22 (22.2)
>91	12 (12.1)	0 (0)	2 (2)	10 (10.1)
Marital status				
Single	10 (10.1)	3 (3)	5 (5.1)	2 (2)
Married	42 (42.4)	12 (12.1)	12 (12.1)	18 (18.2)
Live together	1 (1)	0 (0)	1 (1)	0 (0)
Divorced	2 (2)	0 (0)	1 (1)	1 (1)
Widowed	44 (44.4)	8 (8.1%)	16 (16.2)	20 (20.2)
Education Level				
No education	5 (5.1)	0 (0)	1 (1)	4(4)
Primary to 6th grade	50 (50.5)	6 (6.1)	17 (17.2)	27 (27.3)
Primary completed	14 (14.1)	6 (6.1)	7 (7.1)	1 (1)
University	23 (23.2)	9 (9.1)	7 (7.1)	7 (7.1)
Technical degree	7 (7.1)	2 (2)	3 (3)	2 (2)

Socio-demographic characteristics abd frequencies of weakness in an institutional geriatric service. Values expressed in frequencies and percentages.

The presence of comorbidity of 2 or more diseases occurred in 14.2% of robust patients, in 23.3% of pre-frail patients and in 38.3% of frail patients. Patients with chronic diseases such as hypertension and type 2 diabetes mellitus showed 2.4 and 1.6 times more chances of developing frailty syndrome without being statistically significant, the same trend was presented in other chronic diseases detected in patients (Table 4).

Regarding geriatric syndromes, it was found that 83.8% presented more than three syndromes: 15.1% were of robust patients, 28.2% in pre-frail patients and 40.5% of the patients with frailty syndrome, particularly in people over 81 years of age. It was detected that 54.5% had three or more geriatric syndromes.

Geriatric syndromes such as: sarcopenia, mixed sensory deficit, falls syndrome, immobility and polypharmacy showed a probability of presenting a statistically significant frailty syndrome. Patients with depression, cognitive impairment, mixed incontinence and constipation showed a tendency to present frailty syndrome, without reaching significant values (Table 5).

Table 2: Functionality Indexes.

Barthel Index			Lawton and Brody Index		
	Frequency	**Percentage**		**Frequency**	**Porcentage**
Independent	45	45.5	Independent (100)	45	45.5
Mild dependence	42	42.4	Mild dependence (95-60)	42	42.4
Moderate dependence	4	4	Moderate dependence (40-55)	4	4.0
Serious dependence	4	4	Serious dependence (20-35)	4	4.0
Total dependence	4	4	Total dependence (<20)	4	4.0
			Total	99	100.0

Table 4: Comorbidities and frailty Syndrome.

Frailty syndromevs	OR	*p*	I.C. 95%	
			Inferior	Superior
Arterial hypertension	2.4	0.080	0.884	6.570
Type2 Mellitus Diabetes	1.6	0.339	0.607	4.219
Cancer		0.104		
EVC		0.261		
Ischemic Heart Disease		0.083		
Chronic kidney failure		0.206		
Heart failure	2.6	0.366	0.306	21.860
Hypothyroidism	0.69	0.514	0.234	2.069
Gonarthrosis	1.9	0.258	0.624	5.614

Health characteristics in an institutional geriatric service. Values expressing OR, statistical significance and icliability index.

Table 5: Geriatric syndromes and frailty syndrome.

Geriatric syndromes	OR	p	I.C. 95%	
			Inferior	Superior
Depression	2.5	0.064	0.933	6.585
Cognitive impairment	1.6	0.339	0.607	4.219
Immobility	7.3	**0.030**	0.925	58.125
Sarcopenia		**0.000**		
Mixed incontinence	2	0.142	0.782	5.253
Fall syndrome	4.6	**0.037**	0.985	21.58
Constipation	2.5	0.096	0.832	7.385
Mixed sensory deficit	3.7	**0.008**	1.360	10.085
Polypharmacy	3.8	**0.009**	1.324	10.891

Geriatric syndromes and frailty in an institutional geriatric service. Statistical significance p< 0.005.

Correlation Between Basic and Instrumental Activities

Using Spearman's correlation analysis, the correlation between the degree of functional dependence of basic life activities with the Barthel scale and the instrumental activities determined with the Lawson and Brodody scale was determined, observing statistical significance with the frailty syndrome p=0.000 (Table 6).

Table 6: Correlation analysis of the syndrome fragility with funcionality (n=99).

Rho of Spearman	Coefficient of Correlation	Bilateral significance
Barthel	0.491	0.000
Lawton Brody	0.313	0.002

Values that express the correlation coefficient between the scales of Barthel and Lawton Brody (Rho Spearman).

Discussion

The findings of this study regarding fragility syndrome in elderly adults attended in an outpatient service of a health care hospital are consistent with previous reports regarding sociodemographic variables: female sex, advanced age and low education [26]. The findings in the sample studied, made up mostly of women, may be due to genetic, epigenetic, physiological factors and lifestyles reported as poorly understood [27]. The gender difference in frailty and aging may be caused by the interaction of the above-mentioned factors or by the cultural traits of the region. The observed figures show a higher frequency of frailty in widowed people and those with a lower level of education, followed by the pre-frail and a lower proportion of the robust, which coincides with previous reports [28]. As expected, higher percentages of pre-frailty and frailty were observed in the 8th and 9th decades of life [29-31]. Characteristics that indicate the need to strengthen the palliative approach in the training of the health workers, in the caregivers and companions who will care for this fragile population.

The observed comorbidity was associated with greater pre-frailty and frailty groups. Diabetes mellitus type 2 and hypertension are the most frequent, results coinciding with previous Latin American reports [32,33]. It has been described that the cumulative impacts of multiple geriatric syndromes increase frailty; our data show a high percentage of patients with more that three geriatric syndromes in the frail population [34].

Among the geriatric syndromes found and considered as a risk factor for presenting pre-frailty and frailty syndrome in various studies is sarcopenia, a disorder with great clinical importance because it is considered a risk factor for the presence of falls, limitation of functional capacity and development of immobility that favor a higher degree of dependency [35,36]. The results obtained indicate a strong association of frailty with functional impairment, which indicates the reliability of the Barthel index as a detection method [37]. Reports from studies carried out on various continents show that the association between functional deterioration and the syndrome of falls, immobility and sarcopenia increase the development of fragility [38-40], trend observed in the results of this where sarcopenia, immobility and falls syndrome were statistically significant risk factors for the development of frailty syndrome. Sarcopenia being a risk factor associated with frailty, its early detection is decisive in the geriatric population. The method used in this sample was the measurement of the calf circumference, resulting in a quick and effective anthropometric measure to identify the presence of this disorder, which is why we suggest its use routinely at all points of care. Likewise, the polypharmacy geriatric syndrome contributes to the risk of falls and deterioration of functionality. The findings in the sample studied are of concern since 46.6% of them ingested more than 5 drugs, which enhances the development of fragility, pharmacological iatrogenesis and / or therapeutic obstination in people with a short life prognosis [41].

Visual and auditory sensory loss related to frailty are common among older adults and increase the chances of progression of frailty [42]. In the group studied, it was demonstrated that mixed sensory deficit was a statistically significant risk factor fort the presence of frailty. Results coincide with a meta-analysis carried out in the United States of America that showed a clear cross-sectional association between mixed sensory deficit and different degrees of frailty. However, there is a lack of information regarding the cumulative risk of frailty in people with visual, hearing and multisensory loss.

The high degree of frailty syndrome detected in this sample using the FRAIL questionnaire is consistent with various studies,

highlighting as an advantage of this instrument its easy application by health personnel with different professional profiles regardless of the point of care. Given the dynamism of this condition, its early detection allows reversing its worrying evolution. Likewise, its early identification in patients with advanced and incurable diseases, avoid therapeutic obstinacy and the performance of expensive, aggressive and futile interventional procedures that increase suffering, unnecessarily prolong life and complicate the possibility of providing multidimensional humanized palliative care until the end of life [43].

Conclusions

Based on the above, it can be concluded that the early detection of socio demographic risk factors, type of condition, number of pathologies, degree of functionality, number and type of geriatric syndromes require early detection to attempt their reversibility and establish individualized multidimensional interventions and transdisciplinary that avoid and increase in morbidity and disability. A weakness of the study was the lack of evaluation of the social and spiritual dimensions that it provides to palliative care, and that are essential to offer geriatric palliative care, and that are also essential to offer comprehensive geriatric palliative care, prevent, and alleviate unnecessary suffering for health reasons and improve the living conditions of fragile people, their families, caregivers and the health team involved.

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