



Original article

Differential characteristics in polypathological inpatients in internal medicine departments and acute geriatric units: The PLUPAR study[☆]

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ABSTRACT

Aim: To determine whether there are any differences between polypathological patients attended in Internal Medicine departments and acute Geriatric units.

Methods: A cross-sectional multicenter study was performed. Polypathological patients admitted to an internal medicine or geriatrics department and attended by investigators consecutively between March 1 and June 30, 2011 were included. Data of age, sex, living in a nursing residence or at home, diagnostic category, use of chronic medication, Charlson, Barthel and Lawton–Brody indexes, Pfeiffer questionnaire, delirium during last admission, need of a caregiver, and having a caregiver were gathered. The need of a caregiver was defined when the Barthel index was <60 or Pfeiffer questionnaire ≥ 3 errors.

Results: 471 polypathological patients, 337 from internal medicine and 144 from geriatrics units were included. Geriatrics inpatients were older and more frequently female. Cardiac (62.1% vs 49.6%; $p = .01$), digestive (8.3% vs 3.0%; $p = .04$) and oncohematological diseases (30.2% vs 18.8%; $p = .01$) were more frequent in patients of internal medicine units and neurological (66.2% vs 40.2%; $p < .001$) and locomotive ones (39.1% vs 20.4%; $p < .001$) in geriatrics inpatients. Charlson index was higher for internal medicine inpatients [4.0(2.1) vs 3.5(2.1); $p = .04$]. Patients attended in geriatrics scored higher in Pfeiffer questionnaire [5.5(3.7) vs 3.8(3.3); $p < .001$], and lower in Barthel [38.8(32.5) vs 61.2(34.3); $p = .001$] and Lawton–Brody indexes [0.9(1.6) vs 3.0(2.9); $p < .001$], and more frequently needed a caregiver (87.8% vs 53.6%; $p < .001$) and had it.

Conclusions: There are differences in disease profile and functional and cognitive situation between polypathological patients of internal medicine and geriatrics departments.

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[☆] Jesús Díez-Manglano designed the study and performed data collection and analysis. Begoña de Escalante Yangüela, Ernesto García-Arilla Calvo, Elena Ubis Díez, Eulalia Munilla López, Mercedes Clerencia Sierra, Paz Revillo Pinilla, Teresa Omiste Sanvicente performed data collection. The manuscript was drafted by J. Díez-Manglano. Begoña de Escalante Yangüela, Ernesto García-Arilla Calvo, Elena Ubis Díez, Eulalia Munilla López, Mercedes Clerencia Sierra, Paz Revillo Pinilla, Teresa Omiste Sanvicente helped with its revision.

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1. Introduction

As the average age of the population continues to rise, and the prevalence of chronic diseases such as diabetes or cardiovascular and respiratory diseases grows, it is becoming more and more frequent that a single person suffers with two or more diseases simultaneously. Multimorbidity is the co-existence of a number of acute or chronic diseases and medical situations in the same person [1]. Several recent studies show that one in every four people presents with multiborbidity [2]. It appears in every age group, though its prevalence increases with ageing, affecting 67% of people over 65 years [3].

Ten years ago, a research group created by the Andalusian regional government coined the term “polypathological patient” (PP), establishing a series of diagnostic criteria [4]. A PP is not just an individual who suffers

with more than one disease, but one who has two or more chronic and symptomatic diseases with frequent re-exacerbations that have a negative effect on his functional situation and generate requirements in the various levels of sanitary attention.

With an ever-ageing population and advances in health care, the elderly increasingly present as PP. In hospitals, care of PP rests with the internal medicine and geriatric Departments. However, there are presently no studies comparing patients assigned to these units. This study aims to determine whether there are any differences between PP attended in Internal Medicine departments (IM) and acute Geriatric units (G).

2. Patients and methods

PLUPAR (pacientes pluripatológicos en Aragón), acronym in Spanish for “Polypathological patients in Aragon”, is an observational, and multicenter study. Its goals were to describe the characteristics of PP in Aragon and to validate externally the PROFUND prognostic index [5]. Internists and geriatricians from 13 Aragonese hospitals (Appendix) were involved. From March 1st to June 30th 2011, all patients attending IM Departments or Acute G Units who met the PP criteria established by the Andalusian government [4] (Table 1) were included. Readmitted patients and those who died during hospitalization were excluded. For each patient, the following data were gathered: age, sex, living at home or in a nursing residence, diagnostic category, chronic use of medication at the time of admission, score in Barthel [6] and Lawton–Brody [7] indices in connection to the baseline level of functioning previous to admission, score in Charlson index [8], Pfeiffer questionnaire [9],

sociofamilial Gijon scale [10], number of admissions in the previous year, delirium during last admission, need of a caregiver, having a caregiver and score in PROFUND index [5]. Dependence for basic activities of daily living was defined as a Barthel index < 60, dependence for instrumental activities of daily living as a Lawton–Brody index < 5 in males and < 8 in females, and cognitive decline as > 3 mistakes in the Pfeiffer questionnaire. If the score in the Gijon scale was ≥ 10 , it was assumed there was a risk of social problems. Patients were considered to be in need of a caregiver when their score in the Barthel index was under 60 and/or they made more than 3 mistakes in the Pfeiffer questionnaire. The PROFUND index assesses the probability of survival after one year for PP, taking into account demographic, clinical, analytical, psychometric, functional, sociofamilial and healthcare aspects. It scores between 0 and 30 points, establishing 4 levels of death risk: low (0–2 points), medium (3–6 points), high (7–10 points) and very high (11–30 points).

Patients were classified into two groups—those attended in IM and those attended in G—in order to compare differing characteristics in both groups.

The study was approved by the Ethics Committee for Clinical Research in Aragon. All patients (or their caregivers, in case of cognitive impairment) signed an informed, written consent form.

Quantitative variables were expressed as mean (standard deviation) or median (interquartile range), and qualitative variables as absolute number and percentage. A Student t-test was used to compare quantitative variables if they followed a normal distribution, and the Mann–Whitney U-test if not. Qualitative variables were compared using the Chi-squared test and Yates correction, and the Fisher exact test when needed. For every instance, the level of statistical significance was established with a p value less than 0.05.

3. Results

During the period of the study, 1870 hospital admissions were attended, 1466 to IM and 404 to G. 30.8% of the former and 44.0% of the latter were PP.

Fig. 1 shows the flowchart of patient inclusion. Finally we included 471 PP. Their characteristics are presented in Table 2. Inpatients attended in G were older and more frequently female. Cardiac, digestive and oncohematological diseases were more frequent in IM inpatients; neurological and locomotive ones, in G inpatients (Fig. 2). There were no differences in the total number of diagnostic categories; however, the Charlson index was higher for patients attended in IM.

Heart failure, acute myocardial infarction, diabetes with target organ damage, chronic renal failure and severe liver diseases were more frequent in IM patients, while dementia, cerebrovascular diseases, hemiplegia and peptic ulcer disease were more frequent among G inpatients (Table 3).

G inpatients presented with greater cognitive deterioration, as measured with the Pfeiffer questionnaire, and more dependence for both basic activities (measured with the Barthel index) and instrumental activities of daily living (measured with the Lawton–Brody index). They also needed—and had—a caregiver more frequently (Table 4).

More patients attended in G suffered with delirium in their last hospitalization. Although those attended in IM had more admissions in the previous 12 months, there were no differences in the number of drugs used in both groups. Score in the PROFUND index was higher for G patients [10.6 (4.3) vs. 8.1 (4.8); $p < 0.001$].

4. Discussion

In our study, nearly a third of the IM patients and almost half of the G patients was PP. Cardiac, digestive and oncohematological diseases were more frequent among the former, and diseases of the nervous and locomotive systems among the latter.

The proportion of PP is higher in acute geriatric units than in internal medicine departments. This finding is entirely predictable because

Table 1
Polypathological patient criteria.

CATEGORY A

- A.1. Heart failure which in a situation of clinical stability has been in class II of the NYHA ^a scale (symptoms with ordinary physical activity)
- A.2. Ischemic heart disease (angina or infarction)

CATEGORY B

- B.1. Vasculitis and systemic autoimmune diseases
- B.2. Chronic renal disease defined by elevated levels of creatinine (>1.4 mg/dl in men, >1.3 mg/dl in women) or proteinuria^b, sustained for 3 months

CATEGORY C

- C.1. Chronic lung disease which in a situation of clinical stability has scored grade 2 on the MRC ^c dyspnea scale), or FEV1 < 65%, or SatO2 $\leq$ 90%

CATEGORY D

- D.1. Chronic inflammatory bowel disease
- D.2. Chronic liver disease with evidence of hepatocellular insufficiency ^d or portal hypertension^e

CATEGORY E

- E.1. Stroke.
- E.2. Neurological disease with permanent motor deficit causing impairment for basic activities of daily living (Barthel index under 60)
- E.3. Neurological disease with permanent cognitive impairment, at least moderate (5 or more errors on Pfeiffer)

CATEGORY F:

- F.1. Symptomatic peripheral artery disease
- F.2. Diabetes mellitus with proliferative retinopathy or symptomatic neuropathy

CATEGORY G:

- G.1. Chronic anemia due to digestive loss or acquired hemopathy non-subsiary of healing treatment presenting Hb < 10 g/dl in two determinations more than three months apart
- G.2. Solid or active hematologic neoplasia non-subsiary of healing treatment

CATEGORY H:

- H.1. Chronic osteoarticular disease leading by itself to an impairment for basic activities of daily living (Barthel index under 60)

A patient is considered to be PP if he or she meets at least one criterion from two different categories.

^a Mild impairment of physical activity. Ordinary physical activity causes dyspnea, angina, fatigue or palpitations.

^b Albumin/creatinine ratio > 300 mg/g, microalbuminuria > 3 mg/dl in urine sample or albumin > 300 mg/day in 24-h urine or >200 μ g/min

^c Short of breath when hurrying or walking up a slight hill.

^d INR >1.7, albumin <3.5 g/dl, bilirubin >2 mg/dl.

^e Defined by presence of clinical, analytical, echographic or endoscopic data.

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