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ANALYSIS OF THE EPIDEMIOLOGICAL PANORAMA OF HOSPITALIZATIONS FOR FEMUR FRACTURE IN BRAZIL FROM 2018 TO 2020

Mariana Souza e Silva
Medical student at the institution:
Universidade de Vassouras (UV)
http://lattes.cnpq.br/2654603116409294

Vitor de Castro Regiani Barbosa
Medical student at the institution:
Universidade de Vassouras (UV)
http://lattes.cnpq.br/5805186440157176

Paulo Roberto Hernandes Júnior
Medical student at the institution:
Universidade de Vassouras (UV) e Aluno de Iniciação Científica do PIBIC - Universidade Estadual de Campinas (Unicamp)
http://lattes.cnpq.br/7418862771895322

Cleyton Agra da Silva
Medical student at the institution:
Universidade Federal de Sergipe
http://lattes.cnpq.br/3227867140941411

Rúbio Moreira Bastos Neto
Medical student at the institution:
Universidade Nova Iguaçu (UNIG)
http://lattes.cnpq.br/1039364663041732

Víctor Eduardo Nicácio Costa
Medical student at the institution:
Universidade de Itaúna- UI
http://lattes.cnpq.br/0522892282494748

Leonardo Barbosa Figueiredo Gomes
Medical student at the institution:
Universidade Federal do Rio de Janeiro (UFRJ)
http://lattes.cnpq.br/4961252133256247

Rodrigo da Franca Santos
Medical student at the institution:
Universidade Federal do Rio de Janeiro (UFRJ)
http://lattes.cnpq.br/5149984672145012

Hugo Felipe França de Souza
Medical student at the institution:
Universidade de Vassouras (UV)
https://orcid.org/0000-0003-0411-2942

Luis Fernando Guimarães Porto
Professor of the Medicine course at the institution: Universidade de Vassouras (UV)
http://lattes.cnpq.br/7009878108648307

Abstract: The femur is one of the bones most exposed to trauma in the human body, so it represents the main cause of fracture care, mainly due to falls among the elderly and high-energy trauma among young people and adults. Based on the above situation, the objective of this study was to describe the epidemiological profile of hospitalizations for femur fractures throughout Brazil, from 2016 to 2019. For this purpose, a longitudinal observational analysis was used, based on the data obtained in the SUS hospital admissions information system (SIH-SUS: www2.datasus.gov.br). The results indicate that there were 411,865 hospitalizations over the four years described. Individuals between 20 and 29 years of age and over 70 years of age were more affected, with a prevalence of males. Thus, it was concluded that hospitalizations in young and elderly predominate, in males and in the Southeast region. Car accidents and diseases acquired in senility probably contribute to this profile.
Keywords: Femur fractures, hospitalization, epidemiology.

INTRODUCTION

In the daily routine of urgent and emergency care, the femur is one of the bones most exposed to trauma. It is the largest, strongest and heaviest tubular bone in the human body, located in the thigh and responsible for one third of the size of the individual 1.

One of the bones most exposed to trauma in everyday life, the femur is the largest, strongest and heaviest tubular bone in the human body, located in the thigh and responsible for one third of the individual's size (1). Like most long bones, it is formed from endochondral ossification, and its head ossifies in the first year of life and fuses at age 18 (2).

In terms of anatomy, the proximal femur is composed of a metaphyseal region that encompasses the head, neck, and greater and lesser trochanters. In its distal portion, it comprises the metaphyseal enlargement, which continues with the lateral and medial femoral condyles, interspersed by the intercondylar notch. The lower segment is called the diaphysis, it starts at the lesser trochanter and ends at the metaphyseal flair and condyles. It is worth mentioning that the 5 cm distal to the lesser trochanter are classically called the subtrochanteric region, being considered a fracture pattern(1 and 3).

It is one of the main load-bearing bones (1). Thus, the most common mechanism of femur fractures is high-energy trauma in young and adult individuals and low-energy trauma in the elderly, characterized, respectively, by car accidents and falls (3 and 4). In childhood, traumas also come from high impact, the most common coming from falls, traffic accidents, in addition to frequent associations with various bodily injuries implying abuse and neglect (4).

Furthermore, femur fracture may be related to comorbidities such as osteoporosis, decreased muscle strength, hip geometry, calcium and vitamin-D intake and genetic predisposition (2).

Studies have identified femoral fractures as the main fractures in causes of care, accounting for about 9.69% of these visits, followed by trauma to the head region (7.22%). This fact makes it necessary for the health professional to know how to evaluate, identify, prevent and treat complications in these patients (2).

The advanced trauma life support protocol is necessary to clinically evaluate any injury arising from some high-energy mechanism. The patient's clinic, in general, is characterized by intense pain located in the hip, thigh or knee. In addition, the complaint is accompanied by an inability to bear weight on the affected extremity, and there may or may not be some noticeable deformity. Thus, a complete evaluation of the pelvis is mandatory in order to rule out open fractures. If an open fracture is identified, intravenous tetanus and antibiotic prophylaxis must be administered immediately, in addition to debridement and irrigation of the wound to prevent infection. As for neurovascular assessment, the affected extremity must be assessed before and after reduction. In case of suspicion of vascular compromise, the orthopedist must consult vascular surgery (5).

The treatment of femoral fractures in adults is surgical, while in pediatrics, the most conservative treatment varies from the use of immediate plaster, preceded by closed reduction, being a conservative treatment, or even surgical correction with the use of fixators. external, plates and screws or intramedullary nails (2). Therefore, the social and economic cost of a femoral fracture is high, and among other factors, it results from the morbidity and mortality of the fracture itself, associated diseases, a variable period of hospitalization, often even in an intensive care unit, clinical care and surgical procedures, in addition to prolonged periods of rehabilitation (2 and 6). In the elderly, only 40.5% of patients are totally independent in activities of daily living within a year (6).

Due to its high incidence and relevance in emergency care, this article aimed to analyze the epidemiological profile of femur fractures in Brazil.

METHODOLOGY

This is a longitudinal observational epidemiological analysis based on data obtained from the SUS (unified health system) hospital admissions information system (SIH-SUS: www2.datasus.gov.br).

After accessing the site, the option "Health Information (TABNET)" was chosen, within which the topic of "Epidemiological and Morbidity" was selected with the group of "Hospital Morbidity of the SUS (SIH/SUS)". Then, we chose to search in "General, by place of hospitalization – from 2008 onwards" with the geographic scope of "Brazil by Region and Federation Unit". From then on, in the column, the parameters of year of processing, sex and age group 1 were selected, with a line corresponding to the ICD-10 Morb List and the content of the searches based on the values of hospitalizations, within the period of January 2016 to December 2019. The hospitalizations analyzed correspond to Femur Fracture (ICD-10 Morbidity List), as shown in figure 1.

RESULTS

Table 1 shows the data on the total number of hospitalizations for femur fractures recorded in the period from 2016 to 2019 in Brazil, which totaled 321,288 new cases, of which 98,509 occurred in 2016, 100,956 in 2017, 103,211 in 2018 and 109,189 in 2019.

It can be seen in Table 2 that, in relation to the gender category, males have the highest percentage of cases, 51.72% (213,037), while females represent the share of 48.28% (198,828).

Regarding the age range of hospitalizations for femoral fractures, in Table 3, it is noticeable that the rates are directly proportional to age, since the older the patient, the greater the incidence of the injury. However, it is also possible to notice that the age group corresponding to the period from 20 to 29 years is different from the increases between the other ages, representing an incidence greater than 50% of the previous group and about a third in relation to the following decade.

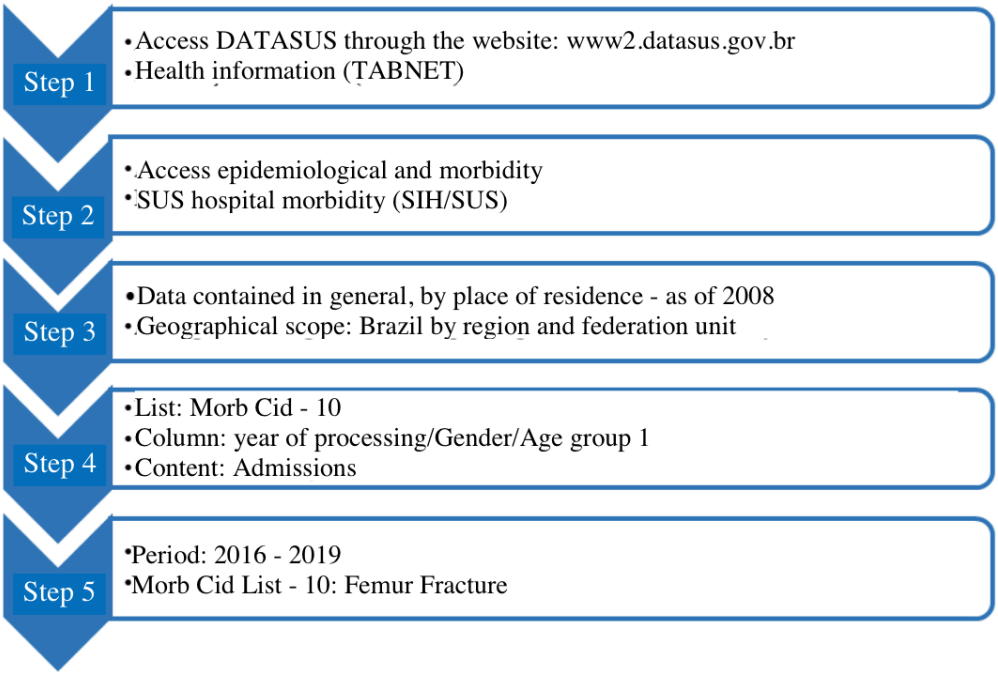

Figure 1: Step by step of how the methodology of the present study was made.

Source: author, 2021.

	ICD-10 Morb List
	Femur fracture
2016	98.509
2017	100.956
2018	103.211
2019	109.189
TOTAL	411.865

ICD-10 Morb List: Femur Fracture

Period: 2016-2019

Table 1: Hospitalizations by Year of Processing According to the ICD-10 Morb List.

Source: Ministry of Health - Hospital Information System of the SUS (SIH/SUS).

	ICD-10 Morb List
	Femur fracture
Male	213.037
Female	198.828
TOTAL	411.865

ICD-10 Morb List: Femur Fracture

Period: 2016-2019

Table 2: Hospitalizations by Sex According to ICD-10 Morb List.

Source: Ministry of Health - Hospital Information System of the SUS (SIH/SUS).

	ICD-10 Morb List
	Femur fracture
under 1 year	987
1 to 4 years	7.082
5 to 9 years	6.219
10 to 14 years	8.880
15 to 19 years	20.468
20 to 29 years	46.664
30 to 39 years	32.011
40 to 49 years	27.647
50 to 59 years	33.343
60 to 69 years	46.319
70 to 79 years	72.241
80 years and over	110.004
TOTAL	411.865

ICD-10 Morb List: Femur Fracture

Period: 2016-2019

Table 3: Hospitalizations by Age Group 1 According to ICD-10 Morb List .

Source: Ministry of Health - Hospital Information System of the SUS (SIH/SUS).

Year	Population
2016	206.081.432
2017	207.660.929
2018	209.182.802
2019	210.659.013

Period: 2016-2019

Table 4: Resident population by Year by Year.

Source: IBGE/Research Directorate. Coordination of Population and Social Indicators. Management of Studies and Analysis of Demographic Dynamics.

Projection of the population of Brazil and Federation Units by sex and age for the period 2000-2030.

DISCUSSION

This study demonstrates that the rate of hospitalizations for femur fractures increases significantly over the years determined throughout the national territory. The profile of these patients was composed mainly of male individuals, aged 70 years or older. However, the number of individuals aged between 20 and 29 years was quite expressive.

The prevalence of males, as well as the most affected age groups, is already expected. Men and 20-29 year olds are more involved in high-energy accidents such as traffic, firearm injuries and falls from great heights, while the elderly are more susceptible to low-energy accidents such as falls. own height or twists (7 and 8).

In this context, osteoporosis stands out, assuming special attention. In 1948, osteoporosis was defined as "a disease in which there is very little bone but what exists is normal", and remains valid today, being considered the most common bone disease of all, especially in the elderly (9). This way, the symptomatology is only present when there is a fracture, even if it is microscopic, which makes it necessary for senile individuals to investigate, through imaging and blood tests, the possible presence of this pathology, considering that the primary objective of the treatment is the prevention of fractures (7).

With regard to the prevalent gender, male, it is known that young adults are the most involved in traffic accidents, with motorcycles being the most cited vehicle. Among the most related causes are the use of alcohol, speeding and inexperience (10). However, in contrast to the total values, according to studies, the female sex prevails after the age of 70, in contrast to the other age groups, since osteoporosis is more prevalent, due to the loss of bone mass due to the decrease in estrogen after menopause (4, 7 and 10).

As for the values of annual hospitalizations, the numbers showed an increasing rate, of about 2% per year, disagreeing with the population growth rate, which corresponds to about 0.7% per year, as shown in table 4. However, this value can be justified based on the frank aging process in Brazil, which has already reached its final stage in the so-called "epidemiological transition" (11).

Thus, several dimensions of the problem, which goes beyond an isolated pathology. It becomes clear, then, the need to continue with the studies, paying attention to new investigations of factors that make femur fractures not only a problem in itself, but one of the consequences.

CONCLUSION

Through this study, it was possible to conclude that femur fractures go beyond an isolated problem, and affect older age groups, such as young people and adults aged between 20 and 29 years, mainly among males. In addition, the number of cases grows every year, disproportionately to population growth, which makes it essential for authorities and health professionals to act in public safety and awareness measures so that the population can be involved in preventive actions.

REFERENCES

1. Almeida SEM. Análise epidemiológica do Acidente Vascular Cerebral no Brasil. Rev Neurocienc. 2012; 20 (4): 481-482. [Accessed 5 September 2021]

2. Azevedo Pinheiro, H. and Gomes Vianna, L., 2012. Taxa de Mortalidade Específica por Doenças Cerebrovasculares no Distrito Federal entre 1995 e 2005. [online] Available at:<https://periodicos.unifesp.br/index.php/neurociencias/article/view/8223> [Accessed 5 September 2021].

3. Pereira Carvalho, V., Leonardo Shigenaga Ribeiro, H., Viera Evangelista da Rocha, B., Alves Barcelos, K., Vieira de Andrade, F., Ribeiro Vasconcelos, G., Justi, J. and Pereira de Melo Junior, J., 2019. Perfil clínico-epidemiológico de pacientes com acidente vascular cerebral. [online] Available at: <https://www.revistasuninter.com/revistasaude/index.php/saudeDesenvolvimento/article/view/1059> [Accessed 5 September 2021].

4. Araújo LPG, Souza GS, Dias PLR, Nepomuceno RM, Cola CSD. Principais fatores de risco para o acidente vascular encefálico e suas consequências: uma revisão de literatura. Revista Interdisciplinar do Pensamento Científico. 2017; 3 (1): 283-296 [Accessed 5 Setember 2021]

5. Santos LB, Waters C. Perfil epidemiológico dos pacientes acometidos por acidente vascular cerebral: revisão integrativa. Braz J of Develop. 2020; 6 (1): 2749-2775. [Accessed 5 September 2021]

6. Castro JAB, et al. Estudo dos principais fatores de risco para acidente vascular encefálico. Rev Bras Clin Med. 2009; 7: 171-173. [Accessed September 2021]

7. L.F.Chaves, M., 2000. Acidente vascular encefálico: conceituação e fatores de risco. [online] Available at: <http://departamentos.cardiol.br/dha/revista/7-4/012.pdf> [Accessed 5 September 2021].

8. José Gagliardi, R., 2009. Hipertensão Arterial e AVC. [online] Available at: <http://comciencia.scielo.br/pdf/cci/n109/a18n109.pdf> [Accessed 8 September 2021].

9. Marrone LCP, Brunelli JPF, Saute RL, Tomasi GH, Madeira BC, Martins WA et al. Cardioembolic sources in stroke in patients in South of Brazil. Trombosis. 2014; 2014:753-80. [Accessed 8 September 2021]
Garritano CR, Luz PM, Pires MLE, Barbosa MTS, Batista KM. Análise da tendência da mortalidade por acidente vascular cerebral no Brasil no século XXI. Arq Bras Cardiol. 2012; 98 (6): 519-527. [Accessed 8 September 2021]

10. National Institute of Neurological Disorders and Stroke –National Institutes of health. Accidente cerebrovascular: Esperanza en la investigación. 2010 [acessado em 06 de setembro de 2021] Disponível em: https://espanol.ninds.nih.gov/trastornos/accidente_cerebrovascular.htm#Women

11. A. Wolf, P., B. D'Agostino, R., J.Belanger, A. and B. Kannel, W., 1990. Probability of stroke: a risk profile from the Framingham Study.. [online] Available at: <José Gagliardi, R., 2009. Hipertensão Arterial e AVC. [online] Available at: <http://comciencia.scielo.br/pdf/cci/n109/a18n109.pdf> [Accessed 8 September 2021].> [Accessed 8 September 2021].

12. Fukujima MM. Acidente vascular cerebral. In: Ortiz KZ. Distúrbios neurológicos adquiridos: linguagem e cognição. 2ª ed. Barueri, SP: Manole; 2010. [Accessed 8 September 2021]

13. Uva MS, Dias CM. Prevalência de Acidente Vascular Cerebral na população portuguesa: dados da amostra ECOS 2013. Boletim epidemiológico. 2014; 9 (2): 12-14. [Accessed 8 September 2021]

14. Dulli D, Samaniego EA. Inpatient and community ischemic strokes in a university hospital. Neuroepidemiology. 2007;28(2):86-92. [Accessed 8 September 2021]

15. PIittella JE, Duarte JE. Prevalência e padrão de distribuição das doenças cerebrovasculares em 242 idosos, procedentes de um hospital geral, necropsiados em Belo Horizonte, Minas Gerais no período de 1976 a 1997. Arq Neuri-Psiquiatr. 2002;60(1):47-55 [Accessed 8 September 2021]

16. National Institute of Neurological Disorders and Stroke –National Institutes of health. Accidente cerebrovascular: Esperanza en la investigación. 2010 [acessado em 06 de setembro de 2021] Disponível em: https://espanol.ninds.nih.gov/trastornos/accidente_cerebrovascular.htm#Women

17. Buchan AM, Balami JS, Arba F. (2013) Epidemiologia da prevenção do acidente vascular cerebral e urgência do tratamento. Em J.D. Spence e H.J.M Barnett (Orgs), Acidente Vascular cerebral: prevenção, tratamento e reabilitação. Porto Alegre: AMGH. [Accessed 9 Setember 2021]

18. Cavalcante TF, Moreira RP, Araujo TL, Lopes MVO. Demographic factors and risk indicators of Stroke: comparison between inhabitants of Fortaleza Municipal District and the national profile. Rev Latino-Am Enfermagem. 2010;18(4):703-8. [Accessed 7 November 2021]

19. Costa VSP, Guimarães PSR, Fernandes KBP, Probst VS, Marques AS, Fujisawa DS. Prevalência de fatores de risco para ocorrência de acidente vascular encefálico em idosos. Fisioter mov. 2014; 7 (4): 555-563. [Accessed 7 November 2021]

20. Carvalho MIF, Delfino JAS, Pereira WMG, Matias ACX, Santos EFS. Acidente vascular cerebral: dados clínicos e epidemiológicos de uma clínica de fisioterapia do sertão nordestino brasileiro. Revista Interfaces: Saúde, Humanas e Tecnologia. 2014; 2 (6): 1-4. [Accessed 7 November 2021]

21. Conterno LO, Barbosa RWN, Rego CM, Filho CRS. Severity of neurological deficit and incidence of nosocomial infections in elderly patients with acute stroke. Sci Med. 2016; 26 (4): ID25168. [Accessed 7 November 2021]

22. Araujo, J., Darcis, J., Tomas, A. and Mello, W., 2018. Tendência da Mortalidade por Acidente Vascular Cerebral no Município de Maringá, Paraná entre os Anos de 2005 a 2015. [online] Scielo. Available at: <https://www.scielo.br/j/ijcs/a/k9nXmcKfW7WSwvtYP8rWsbf/?format=pdf&lang=pt> [Accessed 8 November 2021].

23. Lotufo PA. Stroke in Brazil: a neglected disease. Sao Paulo Med J. 2005;123(1):3-4. http://dx.doi.org/10.1590/S1516-31802005000100001. [Accessed 8 November 2021]

24. Chor D, Faerstein E. Um enfoque epidemiológico da promoção de saúde: as ideias de Geoffrey Rose. Cad Saúde Pública. 2000;16:241. [Accessed 8 November 2021].