Epidemiology of ABI: Characteristics of hospital discharges of men and women under 50 years of age living in Castelló

MBDS Valencian Community 1995-2005

Vita Ascensió Arrufat Gallén

Doctor specialised in Preventive Medicine and Public Health
Health Promotion Programmes, Public Health Centre, Castelló.
Knowledge Commission, ATEN3U Foundation/Association, Castelló, Spain
Epidemiology of ABI: Characteristics of the hospital discharges by gender <50 years old living in Castelló. MBDS Valencian Community 1995-2005

• “If people think that healthcare policymakers base their decisions on logic, they are very much mistaken”.

  – Antonio Sarría. Director of the Instituto de Salud Carlos III’s Health Technology Assessment Agency. DM Wednesday 7th July 2010

  – Can the same be said of local policymakers?
Aim of the study:

• To describe the rates of morbidity, mortality and hospital incidence due to ABI in men and women under 50 years of age living in the province of Castelló. The source of information used in this study was the hospital discharge registry of the hospitals in the Valencian Community Minimum Basic Data Set (MBDS) over the period 1995 to 2005.
Methodology.

- Here we present the findings from a cross-sectional descriptive study, in which the population consisted of those persons living in the province of Castelló under 50 years of age who were admitted as emergencies to the hospitals in the Valencian Community between 1995 and 2005 due to acquired brain injury.

- Population of the study:
  - Emergency hospital admissions of persons of the same gender in the Valencian Community and residing in Castelló, under 50 year of age with the diagnoses of ABI from the ICD-9 annex

- Source of information:
  - MBDS: Minimum basic data set on hospital discharge from the hospitals in the Valencian Community
Methodology 2

- ICD-9 diagnostic codes selected by experts in Neurology:
  - Cerebrovascular disease (430 to 438)
  - Atherosclerosis (440)
  - Inflammatory diseases of the CNS (320-324)
  - Neoplasms, angiomas, metastasis (191, 225.2, 228.02, 228, 198.3)
  - Neurofibromatosis (237.71, 237.72)
  - Endocrine diseases (250.6, 253.5, 253.6), Pernicious anaemia (281, 266.2)
  - Memory loss in the elderly, non-dementia (310.1)
  - Transient global amnesia (437.6)
  - Aphasia (784.3)
  - Dysphasia (438.12)
  - Hemiplegia (342.0, 342.9)
  - Paralysis (344.0-344.9)
  - Dizziness and giddiness of unspecified causation (780.4)
  - Paralysis of vocal cords or larynx (478.3)
  - Syncope and collapse with no defined causation (780.2)
  - Respiratory arrest (799.1)
  - Fracture of skull (850.0-854.19, 800.00-801.99, 803.00-804.99), other open wounds of head (873.0-873.9)
Methodology 3

- Persons affected by ABI are characterised by analysing the following variables:
  - gender
  - age
  - place of residence
  - hospital of admission
  - year of admission
  - date and type of admission
  - admission and discharge service
  - date of admission and discharge,
  - main diagnosis on admission and discharge
Characteristics of hospital discharges by gender <50 years old and living in Castelló: MBDS Valencian Community 1995-2005

Methodology 4:

**Eligibility criteria** for inclusion in the MBDS search:
- Urgent admissions with Main and Secondary Diagnoses of ABI, province of Castelló,
- age below 50 years,
- discharge service: ICU, Neurology, Neurosurgery, Internal Medicine, and hospital stay of over 7 days.

**Exclusion criteria:**
- Main diagnosis of Degenerative brain disease: Multiple sclerosis, Alzheimer, Parkinson.

**Variables to be considered:**
- **socio-demographic:** age, gender, place of residence, hospital, province and healthcare area.
- **concerning hospitalisation:** year of admission, date of admission, urgent admission, admission service, length of stay (days), main diagnosis on admission, description of diagnosis, E-code, Discharge date and service, Circumstances and Diagnosis on discharge.
List of main discharge diagnoses of cases of ABI under 50 years of age living in Castelló. ICD-9. MBDS VC 1995

1.- INTRACRANIAL ABSCESS, 2.- CONCUSSION WITH COMA OF UNSPECIFIED DURATION, 3.- CONCUSSION WITH UNSPECIFIED CONTUSION, 4.- ILL-DEFINED ACUTE CEREBROVASCULAR DISEASE, 5.- MULTIPLE SCLEROSIS, 6.- OP SK BASE FX/BR INJ NEC & UNSPEC STATE OF CONSC, 7.- CL SKULL BASE FX-COM NOS, 8.- CL SKL BASE FX-PROLONGED COMA, 9.- CL SKULL BASE FX-CONCUSS, 10.- CLOS SKULL BASE FRACTURE, 11.- INTRACRANIAL HEMANGIOMA, 12.- TRAUMATIC SUBDURAL HEM, 13.- INTRACEREBRAL HAEMORRHAGE, 14.- SUBARACHNOID HAEMORRHAGE, 15.- TRANS CEREB ISCHAEMIA NOS, 16.- CORTEX LACER W OPN WOUND, 17.- BRAIN INJ NEC-COMA NOS, 18.- PNEUMOCOCCAL MENINGITIS, 19.- BACTERIAL MENINGITIS NOS, 20.- MONPLGA LWR LMB UNSP SDE, 21.- TRAUMATIC BRAIN HEM NEC, 22.- BRAIN LAC NEC-PROLN COMA, 23.- BRAIN LACERATION NEC, 24.- CL SKULL FX NEC-BRF COMA, 25.- CL SKL FX NEC-MENING HEM, 26.- CL SKULL FX NEC-MOD COMA, 27.- SYNCOPE AND COLLAPSE, 28.- VERTEBRAL ARTERY SYNDROME (the 28 ABI diagnoses correspond to the hospital discharges of 41 males and 22 females, a total of 63 patients 1995)

Results

1. The total figure obtained is 630 emergency admissions of persons under 50 years of age living in Castelló, in the hospitals of the VC over 11 years: 446 are males and 184 females.

2. The male/female ratio is:
   - 1.8/1 in 1995 and
   - 2.4/1 in 2005.

Results 2

The annual incidence rate of ABI in persons under 50 years of age is:

- 221 ABI patients per 1,000,000 male inhabitants
- 106.3 ABI patients per 1,000,000 female inhabitants

The mean age on discharge is 30.40 years ± 12.42

The age bracket most commonly found in hospital discharges is that ranging from 18 to 43 years old

BIF ETCD Group
Belvedere Palace Vienna 2009.
http://etcd-viena.blogspot.com/
ON THE INCIDENCE OF ABI

• Mortality rates due to cerebrovascular disease:
  – 124.83- 189.93
  – 106.42- 124.83
  – 95.25- 106.42
  – 85.64- 95.25
  – 57.52- 85.6

  Numerator: Mortality, Denominator: Population of the reference area.
  Valencian Community. Deaths per 100,000 inhabitants AGEPI

• Hospital incidence of ABI in persons under 50, 1995-2005:
  – The annual incidence rate of ABI in persons under 50 years of age is:
    • 221 ABI patients per 1,000,000 male inhabitants,
    • or, in other words, 22.1 cases x 100,000 males
    • 106.3 ABI patients per 1,000,000 females,
    • or, in other words, 10.6 cases x 100,000 females

• THE INCIDENCE OF ABI IN ONE YEAR RANGES (adding up deaths at all ages plus hospital admissions under 50) between:
  – 99.22 and 222.31 cases of ABI per 100,000 inhabitants

Between 1995 and 2005: The mortality rate due to CD in the province ranged from 57.52 to 189.93 deaths per 100,000 inhabitants
Characteristics of hospital discharges by gender <50 years old and living in Castelló: MBDS Valencian Community 1995-2005

• Results

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of cases admitted due to ABI, year and gender MBDS Castelló</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Males</td>
</tr>
<tr>
<td>1996</td>
<td>Males</td>
</tr>
<tr>
<td>1997</td>
<td>Males</td>
</tr>
<tr>
<td>1998</td>
<td>Males</td>
</tr>
<tr>
<td>1999</td>
<td>Males</td>
</tr>
<tr>
<td>2000</td>
<td>Males</td>
</tr>
<tr>
<td>2001</td>
<td>Males</td>
</tr>
<tr>
<td>2002</td>
<td>Males</td>
</tr>
<tr>
<td>2003</td>
<td>Males</td>
</tr>
<tr>
<td>2004</td>
<td>Males</td>
</tr>
<tr>
<td>2005</td>
<td>Males</td>
</tr>
</tbody>
</table>
Results 4

<table>
<thead>
<tr>
<th>Years</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>1996</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>1997</td>
<td>22</td>
<td>16</td>
</tr>
<tr>
<td>1998</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>1999</td>
<td>18</td>
<td>21</td>
</tr>
<tr>
<td>2000</td>
<td>21</td>
<td>19</td>
</tr>
<tr>
<td>2001</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>2002</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>2003</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>2004</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>2005</td>
<td>28</td>
<td>21</td>
</tr>
</tbody>
</table>

Mean stay in males 21.6 days, in females 21.8. There are no statistically significant differences.
ABI males and females under 50 years of age living in Castelló by Municipality and Gender. MBDS 1995

Results 5
ABI under 50 years of age living in Castelló by Municipality and Gender. MBDS 2005

Results 6

Bar chart
Emergency admissions by Health Department. ABI in persons under 50 years of age living in Castelló. 2005

Results

Emergency admissions due to ABI in residents under 50 years of age in Castelló

<table>
<thead>
<tr>
<th>Health Departments in the province of Castelló</th>
<th>Number of admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1: Vinaròs-Benicarlo</td>
<td>32</td>
</tr>
<tr>
<td>D2: Castelló</td>
<td>14</td>
</tr>
<tr>
<td>D3: Vila-real, Vall d’Uixó, Nules.</td>
<td>2</td>
</tr>
<tr>
<td>D4: Segorbe.</td>
<td>2</td>
</tr>
<tr>
<td>NA: No answer</td>
<td></td>
</tr>
</tbody>
</table>

Results

Admission service ABI <50 years by gender

- INTM: Internal Medicine
- NSG: Neurosurgery
- NEU: Neurology
- ICU: Intensive care unit
- CPU: Cardio-pulmonary unit
- GSG: General Surgery
- PED: Paediatrics
Discharge Service of ABI under 50 years of age by gender and year. 1995-2005

Results 9

Service: Neurosurgery NSG, Neurology NEU, Intensive Care Unit ICU, Internal Medicine INTM. Male: M, Female: F

- From 1995 to 2005 no discharges were recorded for the Rehabilitation service
Comparison of the Rate of hospital discharges of TBI due to road accidents and other causes, by gender in the Valencian Community and Rate of ABI in residents under 50 by gender in Castelló. TBI Road accidents and TBI other causes: Raw rate per 1,000,000 male/female inhabitants.

Source: TBI Workgroup data on the measurement of the impact of traumatic injuries on health. SEE 2010. MBDS- AH INE Data ABI <50 years living in Castelló. MBDS Valencian Community 1995-2005

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBI Traffic</td>
<td>182.6</td>
<td>65.8</td>
</tr>
<tr>
<td>TBI Others</td>
<td>422.4</td>
<td>248.4</td>
</tr>
<tr>
<td>ABI &lt;50 yrs</td>
<td>221</td>
<td>106.3</td>
</tr>
</tbody>
</table>

Results 11

- **Of a total of 651 cases of emergency admissions:**
- 528 were sent home, 81.10%
- 27 deaths, 4.14%
- 94 were transferred to another Acute Care Hospital, 17.8%
- 2 were admitted to a Medium and Long-stay Hospital CLTCH, 0.30%
- 10 others, 1.53%
Conclusions 1 ABI >50 years in males and females Castelló:

- The incidence of ABI in >50 years by gender can be measured using hospital MBDS. The Incidence Rate in males is 221 cases in males and 106.3 in females per million inhabitants (m/f).
- In emergency admissions due to ABI there is a predominance of working-age males, mean on discharge 30.4 (SD ± 12.42). m/f ratio: 2.4/1 in 2005.
- The mean number of cases of ABI <50 years old admitted to hospital in the province of Castelló is 41.8 males and 18.8 females.
- The mean stay in general hospital is 21 days for males and females.
- The most common destination of patients on discharge is their home, 17% are transferred to a medium- and long-term care hospital.
- The best treatment is prevention of avoidable risk factors (cardiovascular, accidents at work and on the road, drugs, violence, etc.) and,
- Health Promotion (setting up healthy organisations and spaces).

Recommendation: Determining the Incidence rates by gender in different groups of severity of sequelae is planned as the next subject of research.
The Chronic Care Model.


The microlevel stresses partnerships between patients/families, health teams and community partners. The middle level refers to the healthcare services and the community, with special emphasis on the needs that must be met to ensure continuity and coordination. The upper level corresponds to policies and funding, which are key factors for success in chronic care (Epping-Jordan et al., 2004)
Where are the families in this chart? (in 99% the woman is the main caregiver) Marked with the symbol 😊

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Delivery System</th>
<th>Better outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community resources</td>
<td>Case management</td>
<td>Empowered and informed patients</td>
</tr>
<tr>
<td>Decision support tools and clinical information system (NpfIT)</td>
<td>Disease management</td>
<td></td>
</tr>
<tr>
<td>Health and social care System environment</td>
<td>Supported self-care</td>
<td>Prepared and pro-active health and social care teams</td>
</tr>
<tr>
<td>Source: Department of Health 2005a.</td>
<td>Promoting better health</td>
<td></td>
</tr>
</tbody>
</table>

THANKS FOR YOUR ATTENTION!

Arrufat_vit@gva.es

Help us do away with the idea that a researcher is that absent-minded man who manages to make a breakthrough by pure chance. Great inventions are created by people who have worked hard all their lives.

Juan José Badimón. Director of the Atherothrombosis Unit at Mount Sinai