Ragweed pollenosis primary prevention: over ten years experience of the Lombardy Region and the Local Health Authority ASL Milan 1

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The history
North-West Province of Milan

1990’s: due to
- transformation of agriculture
- urban expansion
- consequences ecological disbalance
- enormous Ambrosia spread
- increased prevalence of allergy to Ambrosia in Lombardy, especially in the North-West of the Province of Milan

First report of ragweed allergy in Lombardy Region

NOTE DI EPIDEMIOLOGIA

Pollinosi da *Ambrosia artemisifolia*
in provincia di Milano

P. BOTTERO *, E. VENECONI *, G. RICCIO *, G. VIGNATI
M. BRIVIO ***, C. NOVI *, C. ORTOLANI ***
Since 1997, the Lombardy Region formed a study group\textsuperscript{1,2} in order to face the problem of ragweed spread and its correlated pollinosis.

\textsuperscript{1} D.G.R. 24 gennaio 1997 - n. VI/24264: “Costituzione di un gruppo di studio regionale per la prevenzione delle allergopatie da Ambrosia”;
\textsuperscript{2} D.D.G 29 settembre 2004 - n. 16190: “Istituzione di un gruppo di lavoro al fine di attuare la sorveglianza dell’espansione territoriale della pianta ambrosia e per organizzare studi epidemiologici intesi a valutare l’andamento dell’incidenza delle allergopatie da ambrosia, in applicazione al decreto del Direttore Generale Sanità 4 maggio n. 7257”;
Regional study group

Main actions of this group were:

- **first mapping** of regional territory by aerobiological monitoring data;

- quantification and functioning of **pollen traps**; indication to the Local Health Authority who must at least have one pollen trap;

- **epidemiological study** about the **prevalence** of ragweed allergy in the population of at risk areas (North-West of the Province of Milan and South of the Province of Varese) and some control areas.
Ragweed allergy: the evidences

Results of the epidemiological regional study about prevalence of ragweed pollinosis on the general adult population

<table>
<thead>
<tr>
<th>Place</th>
<th>1997</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bergamo</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Brescia</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Busto Arsizio</td>
<td>8.75</td>
<td></td>
</tr>
<tr>
<td>Legnano</td>
<td>4.30</td>
<td></td>
</tr>
<tr>
<td>Magenta – Abbiategrasso</td>
<td>2.37</td>
<td></td>
</tr>
<tr>
<td>Rho</td>
<td>3.60</td>
<td></td>
</tr>
<tr>
<td>Somma Lombardo Gallarate</td>
<td>4.73</td>
<td></td>
</tr>
<tr>
<td>Sondrio</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Vallecmonica</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

The results of this study were: in the risk areas the prevalence reached up to 8.75% of the general population.
First measures: Regional President’s Ordinance

3 consecutive mowings a year prior to blossom:

• Last ten days of June
• Last ten days of July
• Second ten days of August

Functions of the Local Health Authority

• consulting and collaboration to the Mayor
• inform and sensitize the population
• control the Ordinance application

Ultimate goal: to protect citizens’ health
The study was repeated in 2005 in the same areas and using the same methods:

- increase of maximum estimated prevalence up to 12-15%
- confirmed the necessity to improve the first preventive indications.
The Department of Medical Prevention of ASL Mi1 also followed closely the regional indications and went further: collaborating with the Region in order to improve and perfect the preventive indications.

- Jurisdiction: 73 towns
- Located in North-West Milan area: with the South Varese area, the most polluted area by ragweed in Lombardy and in Italy

Actions aimed at primary prevention of ragweed pollenosis (1)

• Information and education of the population and of the public authority: preliminary phase to make understandable and acceptable the preventive measures

• Aerobiological monitoring of ragweed pollen. Our 3 stations are included in R.I.M.A., the Italian Aerobiological Network, coordinated by Italian Association of Aerobiology.

• Control of the territory: surveillance of grow over stands
Actions aimed at primary prevention of ragweed pollenosis (2)

- Specific well-designed epidemiological study about the prevalence of ragweed allergy in the population, in collaboration with Allergy Service, Magenta Hospital

- Carry-out assessment of direct health cost due to ragweed (for 2009 about €1.705.893)

- Carry out studies on methods to limit the ragweed spreading, in collaboration with the Region and the Province of Milan. These studies demonstrated the effectiveness of some methods.
Legnano, 29 novembre 2011

Conventions
Training and update courses
Target: Local Health Authority and Town Administration
Information to the Mayor

Aim of annual report

- Define the situation
- Summarize different kinds of problem solving
- Obtain uniform level of knowledge

Annual Guide Lines
Information to the citizens

Caratteristiche biologiche dell'Ambrosia ed interventi volti a prevenire la diffusione

A PROPOSITO DI PREVENZIONE: CONOSCERE L'AMBROSIA E PREVENIRE LE ALLERGIE

L'Ambrosia (Ambrosia artemisiifolia) è una pianta erbaia infestante, annuale, a fiorellino tardo estivo (agosto e settembre), che produce elevate quantità di poline allergenica trasportate poi dal vento. È originaria del Nord America, ma è comune anche in Europa, dove è giunta probabilmente come contaminante di carichi di semin- ti. In provincia di Milano è conosciuta fin dal 1400 come pianta selvatica naturalizzata. Dagli anni '90, a seguito di trasforma- zioni dell'agricoltura, dell'espansione urbana e delle conseguenti alterazioni dell'equilibrio ecologico, si è aumenta- to il diffondersi, diventando una delle più importanti delle poline di questa pianta a livello europeo. Ogni anno, in particolare in agosto e settembre, si riscontra un aumento notevole di allergia. In Italia, il 25% della popolazione è allergico a queste poline. I sintomi possono essere respiratori (frequente faringe, narice stridula, polmonite), cutanei (eruzioni cutanee), gastrointestinali (tosse, nausea, diarrea) e neurologici (ipegmia, eventi cerebrali).

Per prevenire:
L'UOC (Unità Operativa Complementare) Igienà e Sanità Pubblica promuove un'attività di informazione nei confronti dei cittadini, attraverso opuscoli e manifesti, e collabora con i Comuni, che hanno il compito di bonificare le aree pubbliche interessate dalla pianta. Ogni anno, viene effettuata un'attività di vigilanza anche da parte dell'UOC.

Per curarsi:
Rifarsi all'operatore medico, ai Centri di Allergologia delle Aziende Ospedaliere o alle Aziende Sanitarie pubbliche.

Calendario Rilievo di Ambrosia al nord-ovest di Milano:

- Calendario delle date di rilevamento:
- Settembre:
  - 24 settembre:
    - Alta
  - 25 settembre:
    - Media
  - 26 settembre:
    - Alte
- Ottobre:
  - 27 ottobre:
    - Media
  - 28 ottobre:
    - Media
  - 29 ottobre:
    - Alta

Per informazioni:
Il sito aziendale www.asl.mi.it, nell'area tematica “Sistema di monitoraggio allergogena” riporta notizie e informazioni sulle caratteristiche biologiche della pianta, le modalità di riconoscimento, i sintomi dell'allergia e i consigli comportamentali per soggetti allergici.
Bill-boards and posters
Brochures

- Historical facts on the plant spreading in this area
- Habitat
- Botanical and biological characteristics
- Way to recognize ragweed in different phenological phases
- Way to compare it with similar plants
- Methods to fight the plant spreading
- Allergy symptoms
- Behavioural recommendations for patients
- How to point out the presence of the plant to institutions
Special gadgets: annual pollen calendar

Allergy services → patients
City hall → citizens
General Practitioners/Pediatricians → citizens and patients
Special gadgets: educative board game for children *Aller-giocando*

**Objectives**

- know pollinosis
- educate to: comprehension of environmental processes and their impact on human health

**Primary schools**

**Pediatric outpatient’s allergy departments**
Pollin bulletin

Bollettino pollini e spore - Stazione di Legnano
Settimana da lunedì 7 settembre a domenica 13 settembre 2009

<table>
<thead>
<tr>
<th>Pollini/Sporae</th>
<th>Concentrazione</th>
<th>Tendenza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betulaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Corylaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Cannabisae</td>
<td>bassa</td>
<td>in diminuzione</td>
</tr>
<tr>
<td>Compositae</td>
<td>alta</td>
<td>in diminuzione</td>
</tr>
<tr>
<td>di cui Ambrosia</td>
<td>alta</td>
<td>stabile</td>
</tr>
<tr>
<td>di cui Artemisia</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Cupressaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Fagaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>di cui Fagus</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Gramineae</td>
<td>alta</td>
<td>stabile</td>
</tr>
<tr>
<td>Oleaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Pinaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Plantaginaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Plataneae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Poligonaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Salicaceae</td>
<td>assenti</td>
<td>stabile</td>
</tr>
<tr>
<td>Urticaceae</td>
<td>alta</td>
<td>stabile</td>
</tr>
</tbody>
</table>

Legend: Concentrazione pollinica (pollin per mc di aria)

- Published on web-site: www.aslmi1.mi.it
- Send by e-mail:
  - Allergy services
  - Doctors Associations
  - Chemist’s shops
  - Town council
  - Italian Aerobiological Network
Control of the territory

- Surveillance of grow over stands (2011: about 700 stands grow over by ragweed)
Epidemiological Study Results

- **14%** of the population sample examined was allergic to ragweed (sample: health care population, 1373 subjects)
- *increase* of prevalence from **9.2%** in 1996 to **14%** in 2005
- *high percentage* of asthma (more than **40%**) was observed in ragweed allergic patients

We can say that *ragweed is a public health problem in our area.*
Assessment of direct health cost due to ragweed - 2009

<table>
<thead>
<tr>
<th></th>
<th>Total cost assessment (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First examination:</td>
<td></td>
</tr>
<tr>
<td>Tests and physician evaluation</td>
<td>146.483</td>
</tr>
<tr>
<td>SIT patients:</td>
<td></td>
</tr>
<tr>
<td>Tests and physician evaluation</td>
<td>91.783</td>
</tr>
<tr>
<td>Allergenic extract</td>
<td>335.256</td>
</tr>
<tr>
<td>Drugs</td>
<td>1.115.623</td>
</tr>
<tr>
<td>Hospitalizations</td>
<td>16.748</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1.705.893</strong></td>
</tr>
</tbody>
</table>
Studies on methods to limit the ragweed spreading: 2005-2008

Aim

- Verify the effectiveness of different methods for fighting ragweed
- Reach a wider preventive measures implementation
Material and methods

Not repeated large land parcels

Each parcel: one method
Witness parcel: no method

Experimental fields

Farm land located in the Local Health Authority territory
Different methods can be useful to limit ragweed spreading and pollen production:

- **mowing** one or two times a year
- grounds covered by vegetation
- ground ploughing
- cutting-up
- disk harrowing
- chemical control

These results are at the root of the actual regional indications for the prevention of ragweed spreading
New regional indications
Different for various grow over stands

- Urban areas, road sides, great road-works sides: 2 mowings
  - end of July (last week)
  - end of August (third week)

- Agricultural areas: 1 mowing during phenological phase “bud inflorescence”
  (first fifteen days of August)

- Technical attachment: explicative list of different methods can be useful to fighting ragweed
Problems

- non executed preventive measures
- insufficient sensibility by local administrations

- difficulty to adopt annual ASL indications
- Mayors can bring modifications or non transposing ASL indications

![Bar graph showing Town Administrations reply]

![Pie chart showing Measures foreseen by Mayor's Ordinance]

- 25%: 55%
- 7%: 16%
- 3%: 7%
- 10%: 22%
- 25%: 55%
- last Regional/ASL indications
- 3 mow ings (O.R. 1999)
- 2 mow ings
- not specified
Present situation

Ragweed spreading in Lombardy Year 2010

Ragweed spreading seems contained enough

- in some of the most polluted areas: the ragweed pollen has diminished and in others it’s stable

- unfortunately, in other areas, pollen has increased, probably because the prevention measures were not well implemented by the owners of infested grounds due to the financial reasons, or lack of sensibility

Data source: Regional Local Health Authority annual reports
Conclusion

• Now we are thinking at a different form of Regional Indications, perhaps a law

• However we believe that international collaboration is essential for development of research, education, information, laws, concerning the fight against ragweed
Thanks for your attention!