7:38, Thursday Morning - Clyde Belmont has a brush with death.
Overview

- Epidemiology
- Clinical features
- Principles of management
- Salivary gland dysfunction
  - (BRON)
  - (Oral mucositis)
- Conclusion (case)
Introduction

- Parkinson’s disease: xerostomia – 55%; loose dentures – 31%; sore gums – 23%; ulcers – 17%; bleeding gums – 12%, burning sensation – 10%; loose teeth – 8%; sore teeth – 5%

  Clifford & Finnerty, 1995

- Multiple sclerosis: orofacial paraesthesia – 37%; orofacial pain – 30%; taste disturbance – 23%; orofacial muscle spasm/palsy – 17%; difficulty chewing – 8%

  Fabiano, 1983
Epidemiology
“While the individual man is an insoluble puzzle, in the aggregate he becomes a mathematical certainty. You can, for example, never foretell what any one man will be up to, but you can say with precision what an average number will be up to. Individuals vary, but percentages remain constant. So says the statistician”.

Arthur Conan Doyle
Statistics

“The average human has one breast and one testicle”.

Des McHale
OASis study

- Observational study
- 250 patients with advanced cancer
- Oral Symptom Assessment Scale (cf MSAS)
  - 20 oral symptoms
  - presence
  - frequency, severity, bothersomeness
OASis study

- ≥1 oral symptom – 97.6% patient
- Median number oral symptoms – 5
- Range number oral symptoms – 1 to 18
## OASis study

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry mouth</td>
<td>83.5%</td>
</tr>
<tr>
<td>Taste disturbance</td>
<td>55.5%</td>
</tr>
<tr>
<td>Coating tongue</td>
<td>47.0%</td>
</tr>
<tr>
<td>Lip discomfort</td>
<td>38.5%</td>
</tr>
<tr>
<td>Dirty mouth</td>
<td>35.0%</td>
</tr>
<tr>
<td>Difficulty swallowing</td>
<td>34.5%</td>
</tr>
<tr>
<td>Lip cracking</td>
<td>34.0%</td>
</tr>
<tr>
<td>Mouth discomfort</td>
<td>30.5%</td>
</tr>
<tr>
<td>Difficulty speaking</td>
<td>27.0%</td>
</tr>
<tr>
<td>Difficulty chewing</td>
<td>22.5%</td>
</tr>
</tbody>
</table>
## OASis study

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouth corner cracking</td>
<td>22.5%</td>
</tr>
<tr>
<td>Sensitive teeth</td>
<td>21.0%</td>
</tr>
<tr>
<td>Mouth ulcers</td>
<td>17.0%</td>
</tr>
<tr>
<td>Bad breath</td>
<td>16.5%</td>
</tr>
<tr>
<td>Jagged teeth</td>
<td>16.5%</td>
</tr>
<tr>
<td>Altered sensation</td>
<td>11.0%</td>
</tr>
<tr>
<td>Denture fitting problems</td>
<td>10.5%</td>
</tr>
<tr>
<td>Toothache</td>
<td>10.0%</td>
</tr>
<tr>
<td>Burning sensation</td>
<td>9.5%</td>
</tr>
<tr>
<td>Bleeding mouth</td>
<td>7.5%</td>
</tr>
</tbody>
</table>
OASis study

Dry mouth (xerostomia):
- 209 / 250 patients (83.5%)
- “Rarely” – 9.1%; “occasionally” – 18.7%; “frequently” – 38.8%; “almost constantly” – 33.5%
- “Slight” – 23.1%; “moderate” – 40.9%; “severe” – 26.4%; “very severe” – 9.6%
- “Not at all” – 18.2%; “A little bit” – 30.1%; “quite a bit” – 19.1%; “somewhat” – 20.6%; “very much” – 12.0%
OASis study

Bad breath (halitosis):
- 41 / 250 patients (16.5%)

- “Rarely” – 7.3%; “occasionally” – 29.3%; “frequently” – 46.3%; “almost constantly” – 17.1%

- “Slight” – 22.0%; “moderate” – 53.7%; “severe” – 19.5%; “very severe” – 4.9%

- “Not at all” – 4.9%; “A little bit” – 34.2%; “quite a bit” – 22.0%; “somewhat” – 26.8%; “very much” – 12.2%
Clinical features
Clinical features

- What’s “normal”?
- What’s “abnormal”?
- Clinical variants
- Special circumstances (e.g. immunosuppression)
Clinical features
Clinical features
Clinical features
Clinical features
Clinical features
Clinical features
Clinical features
Principles of management
Multidisciplinary working

1. Call dentist about missing dentures.
2. Call doctor about embarrassing new discomfort.
Evidence-based medicine

- Systematic reviews
- Randomised controlled trials
- Cohort studies
- Case control studies
- Case series, case reports
- Expert opinion
Evidence-based medicine
"We believe that this logical approach to mouth care is more effective than the anecdotal remedies suggested by Regnard et al. Was the recommendation to use gin a misprint?"

Lucas & Roberts, 1998

"Semifrozen tonic water and gin" recommended for treatment of dry mouth
“Dry mouth may be relieved by good mouth care and measures such as chewing sugar-free gum, sucking ice or pineapple chunks, or the use of artificial saliva; dry mouth associated with candidiasis can be treated by oral preparations of nystatin or miconazole, alternatively, fluconazole can be given by mouth”.

BNF, October 2016
Evidence-based medicine
Evidence-based medicine
Principles of management

- Screening
- Prevention*
- Treatment
Principles of management

- Assessment
- Treatment
  - definitive
  - symptomatic
- Re-assessment
Oral hygiene

- Maintenance of normal oral hygiene measures
- Management of contributing factors (e.g. fatigue, depression)
- Management of salivary gland dysfunction
Oral hygiene

- Toothbrushing – twice daily
- Interdental cleaning – once daily
- Denture cleaning – once daily (night)
- Oral mucosa cleaning – after each meal
  - (Tongue scraping)
  - (Chlorhexidine – difficulties with mechanical control of dental plaque)
Salivary gland dysfunction
Salivary gland dysfunction
## Salivary gland dysfunction

<table>
<thead>
<tr>
<th>Class of molecule</th>
<th>Specific molecules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrolytes</td>
<td>Ammonia, bicarbonate, calcium, chloride, fluoride, iodide, magnesium, phosphates, potassium, sodium, sulphates, thiocyanate</td>
</tr>
<tr>
<td>Small organic molecules</td>
<td>Creatinine, glucose, nitrogen, sialic acid, urea, uric acid</td>
</tr>
<tr>
<td>Large organic molecules</td>
<td>Albumin, amylase, ß-glucuronidase, carbohydrases, cystatins, epidermal growth factor, esterases, fibronectin, gustin, histatins, immunoglobulin A, immunoglobulin G, immunoglobulin M, kallikrein, lactic dehydrogenase, lactoferrin, lipase, lipids, lysozyme, mucins, nerve growth factor, parotid aggregins, peptidases, phosphatases, proline-rich proteins, ribonucleases, salivary peroxidases, tyrosine-rich proteins, vitamin-binding proteins</td>
</tr>
</tbody>
</table>
Salivary gland dysfunction

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>General problems</td>
<td>Oral discomfort</td>
</tr>
<tr>
<td></td>
<td>Lip discomfort</td>
</tr>
<tr>
<td></td>
<td>Cracking of lips</td>
</tr>
<tr>
<td>Eating-related problems</td>
<td>Anorexia</td>
</tr>
<tr>
<td></td>
<td>Taste disturbance</td>
</tr>
<tr>
<td></td>
<td>Difficulty chewing</td>
</tr>
<tr>
<td></td>
<td>Difficulty swallowing</td>
</tr>
<tr>
<td></td>
<td>Decreased intake of nutrition</td>
</tr>
<tr>
<td>Speech-related problems</td>
<td>Difficulty speaking</td>
</tr>
</tbody>
</table>
### Salivary gland dysfunction

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral hygiene</td>
<td>Poor oral hygiene</td>
</tr>
<tr>
<td></td>
<td>Halitosis</td>
</tr>
<tr>
<td>Oral infections</td>
<td>Oral candidosis</td>
</tr>
<tr>
<td></td>
<td>Dental caries</td>
</tr>
<tr>
<td></td>
<td>Periodontal disease</td>
</tr>
<tr>
<td></td>
<td>Salivary gland infections</td>
</tr>
<tr>
<td>Systemic infections</td>
<td>Secondary to oral infection</td>
</tr>
<tr>
<td></td>
<td>(e.g. pneumonia, septicaemia)</td>
</tr>
</tbody>
</table>
## Salivary gland dysfunction

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental/denture problems</td>
<td>Dental erosion (leading to dental sensitivity/trauma to oral mucosa)</td>
</tr>
<tr>
<td></td>
<td>Poorly fitting dentures (leading to trauma to oral mucosa)</td>
</tr>
<tr>
<td>Psychosocial problems</td>
<td>Embarrassment</td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
</tr>
<tr>
<td>Miscellaneous problems</td>
<td>Social isolation</td>
</tr>
<tr>
<td></td>
<td>Sleep disturbance</td>
</tr>
<tr>
<td></td>
<td>Difficulty using oral transmucosal Rx</td>
</tr>
<tr>
<td></td>
<td>Oesophagitis</td>
</tr>
<tr>
<td></td>
<td>Urinary frequency / nocturia</td>
</tr>
</tbody>
</table>
Salivary gland dysfunction

“Earlier before this I used to participate in choir singing, nowadays I can’t sing at all because my voice is so weak, my vocal cords are so dry and I am afraid to ‘lose my head’, so I don’t participate at all, I avoid all these things and prefer staying at home. I feel sorry and depressed”

Rydholm, 2002
Salivary gland dysfunction

Management:
- Prevention
- Treatment of cause
- Symptomatic treatment
- Prevention complications
- Treatment complications
Salivary gland dysfunction

Symptomatic treatment
- Saliva substitutes
- Saliva stimulants
- Combination
Salivary gland dysfunction

Saliva substitutes:
- water
- “artificial saliva”
- others substances, e.g. cows milk, vegetable oil

- Treat xerostomia
- Minimal effect other symptoms SGD
- Short duration of effect
- Local /systemic adverse effects
- [Acidic]
Salivary gland dysfunction

Saliva stimulants:
- organic acids
- sugar free chewing gum
- parasympathomimetics, e.g. pilocarpine
- other substances, e.g. sugar free mints
- acupuncture

- Treat xerostomia
- Treat other symptoms SGD
- Greater efficacy / patient preference
- Local / systemic adverse effects
- [Acidic]
BRON
Prevalence BRON

- All studies – 6.1%
- Documented follow up – 13.3%
- Undocumented follow up – 0.7%
- Epidemiologic studies – 1.2%

Oral Care Study Group of MASCC / ISOO, 2010
BRON
Oral mucositis
Oral mucositis
Oral mucositis
Oral mucositis
Conclusion
Case
Case
Oral complications

“Oral problems are common in cancer patients, and are a significant cause of morbidity and impaired quality of life in this group of patients. Moreover, in some patients they can prevent administration of potentially life-saving treatment, whilst in other patients they can themselves cause potentially life-threatening complications”.

Oral complications of cancer and its management, 2010
Oral complications

“Oral problems are usually predictable, and may be prevented or ameliorated by appropriate interventions. However, even when it is not possible to prevent the oral problem, it is usually possible to treat / palliate the oral problem (and so to prevent or ameliorate the associated complications)”.

Oral complications of cancer and its management, 2010