ELECTROCHEMOTHERAPY

Physics and chemistry together for you

Effective on cutaneous tumors like sarcoids, melanoma, sarcoma, mast cell tumor…
ELECTROCHEMOTHERAPY
with ELECTROvet

1. Principle
2. Effective treatment
3. Become an expert
I. HAVE YOU EVER HEARD ABOUT IT?

T0: Intratumoral or IV injection anticancer drug*

T0 + 2 mns: Electric pulses application

G.Sersa et al. (2008)
2. EFFECTIVE TREATMENT

ELECTROCHEMO FIGURES

Since 2006 on human patients

Success rate: 84.1% (on 1894 tumors) (Miklavcic, 2013)

Response rates at 4 years on sarcoids:

97.9% (Tamzali, 2012)

Recovery rate squamous cell carcinoma on cats:

87.5% (Tozon, 2014)
2. EFFECTIVE TREATMENT


<table>
<thead>
<tr>
<th>Tumor types</th>
<th>Cases</th>
<th>Observation time</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>squamous cell carcinoma</td>
<td>11</td>
<td>2 months à 3 years</td>
<td><strong>87.5%</strong> objective response</td>
</tr>
<tr>
<td>fibrosarcoma</td>
<td>72</td>
<td>over 2 years</td>
<td>time to recurrence:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12 months - intraoperative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>19 months - postoperative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(4 months for surgery alone)</td>
</tr>
<tr>
<td>mast cell tumor</td>
<td>25</td>
<td>over 3 years</td>
<td><strong>62.5%</strong> complete response</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(comparison to surgery)</td>
</tr>
<tr>
<td>sarcoid</td>
<td>48</td>
<td>4 years</td>
<td><strong>97.9%</strong> complete response</td>
</tr>
</tbody>
</table>
ON SARCOIDS:

**Surgery** + 3 sessions

4 sessions  2 weeks apart - 8 months later

3 sessions  12 months later
ON SARCOID:

Surgery + electrochemotherapy then 3 sessions (2-3 weeks apart)

ON CARCINOMA:

3 sessions (2-3 weeks apart)
ON SQUAMOUS CELL CARCINOMA:

2 sessions - 6 months

A. Alaphilippe ELECTROvet S13

ON FIBROSARCOMA:

Radiation therapy
3 sessions
3 months later

C. Tripp ELECTROvet S13

A. Alaphilippe ELECTROvet S13
3. **BECOME AN EXPERT:**

**EASY STANDARD PROCEDURE**

*(since 2006 on human and vet patients)*

1. **General anesthesia**
   - General anesthesia to ensure security of patient and practitioner.

2. **Drug injection**
   - Intratumoral or intravenous injection cisplatin or bleomycin.

3. **Applying electric pulses**
   - 8 pulses of 100 us separate by 2 ms. (ESOPE standard protocol 2006).

1 session = 20 mns
3. BECOME AN EXPERT: TREATMENTS VIDEOS


<table>
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<tr>
<th>Species</th>
<th>Tumor type</th>
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<tbody>
<tr>
<td>Horse</td>
<td>Sarcoid (eyelid)</td>
</tr>
<tr>
<td>Horse</td>
<td>Sarcoid (chest)</td>
</tr>
<tr>
<td>Horse</td>
<td>Sarcoid (abdomen)</td>
</tr>
<tr>
<td>Horse</td>
<td>Sarcoid (abdomen) (+15j)</td>
</tr>
<tr>
<td>Horse</td>
<td>Carcinoma (nose)</td>
</tr>
<tr>
<td>Dog</td>
<td>Fibrosarcoma (mouth)</td>
</tr>
<tr>
<td>Rat</td>
<td>Mammary tumor</td>
</tr>
<tr>
<td>Rabbit</td>
<td>Mammary tumor</td>
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</table>
3. BECOME AN EXPERT: WHEN USE IT

**Alone**, to cure small-sized tumors

Before, during, or after

**surgery or radiation therapy**

Criteria for optimal efficiency:

Maximum size **5 cm (2 inch)**
3. BECOME AN EXPERT: WHEN YOU USE IT

In response to each pulse:

muscular contractions

Only local side effects:

œdema, necrosis

On average: 1 - 3 sessions

depending on tumor size and response

Follow-up: every 2 weeks
3. BECOME AN EXPERT: RESULTS OF 30 YEARS

Tumor cells selective
(more sensitive to cytotoxic agent and electric pulses because of shape and size of tumor cells)

Cytotoxicity increased
(bleomycin > 1000-fold, cisplatin > 80-fold)

Vascular lock within tumor vessels
+ Immune system activation
OFFERS:

12,950 €
unit

4,850 €
unit

11.2 kg

3.3 kg
OFFERS:

**Electrical protocol**

LEROY Biotech decides to design devices compliant with standard operating procedures used since 2006: 8 pulses -1300V - 100 microsec each 2milisec.

**User interface**

- Touchscreen + beeps
- LEDs + beeps

**Editable electrical parameters**

- ✔
- ✗

**Display curves of current delivered on the screen**

- ✔
- ✗

**History of your treatments**

- ✔
- ✗

**Warranty**

- 5 years
- 3 years
<table>
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<tr>
<th>Electrode type</th>
<th>Contact - « L »</th>
<th>Needles</th>
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<td>Sterilization</td>
<td>autoclave (up to 20 times)</td>
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<td>Connection to the ELECTROvet S13</td>
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<tr>
<td>Connection to the ELECTROvet EZ</td>
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<tr>
<td>Indication</td>
<td>Superficial tumors</td>
<td>Tumors up to 1.5 cm deep</td>
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<td>Mathematical modeling of the electric field (tumor - 2,5x1,5 cm)</td>
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- OFFERS:
  - Electrode type: Contact « L »
  - Sterilization: autoclave (up to 20 times)
  - Connection to the ELECTROvet S13
  - Connection to the ELECTROvet EZ
  - Indication: Superficial tumors
  - Mathematical modeling of the electric field (tumor - 2,5x1,5 cm)
  - Needles: Tumors up to 1.5 cm deep
TAKE HOME MESSAGE

ELECTROCHEMO = Injection (bleomycin or cisplatin) + Electric pulses

Efficient on tumor cells
Since 2006 on human patient
Easy to use

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REFERENCES


Mir-LM. Bases and rationale of the electrochemotherapy. EJC supplements 4. 2006. 38-44.


