CASE REPORT

Canine Pemphigus Vulgaris Treated with Gold Salt Therapy

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Summary

A nine year old spayed female Collie was diagnosed as having pemphigus vulgaris. Response to corticosteroid and antibiotic therapies was unsatisfactory. Aurothioglucose therapy was used later as the sole treatment. The dog achieved a complete remission lasting at least ten months.

Résumé

Traitement du pemphigus vulgaire canin avec de l'aurothioglucose

Les auteurs ont diagnostiqué la pemphigus vulgaire chez une chienne castrée âgée de neuf ans. Un traitement à base de corticostéroïdes et d'antibiotiques se révèle inadéquat. Ils décident ultérieurement de ne plus utiliser de l'aurothioglucose et la chienne se régénère au moins dix mois à guérir.

Introduction

Attempts have been made to achieve remission or at least control autoimmune skin disorders with a variety of drugs. Many of these substances as sole therapies or in combinations either lack efficacy and/or may cause undesirable side effects. Encouraging reports concerning gold salt therapy in veterinary medicine are beginning to appear but clinical experience is still somewhat limited. This report records one such experience.

History

On November 3, 1981 a 20 kg nine year old spayed female Collie was presented with salivary drooling and crusting raw lesions of the lip margins. The problem had begun approximately one month earlier and had been treated with antibiotics, prednisone, vitamins and metronidazole with no lasting or dramatic improvement. The dog had previously been diagnosed as having hip dysplasia and secondary arthritis.

Clinical Findings and Treatment

At first presentation, the physical examination was unremarkable with the exception of skin lesions. The refractory nature and the location and nature of the lesions suggested a diagnosis of pemphigus vulgaris. A biopsy was obtained; the resulting histopathology suggested an immune etiology. Prednisone\(^1\) orally at 15 mg every eight hours for 14 days was initiated. The response was favorable, but the dog deteriorated rapidly as the dose was reduced. Through January and February of 1982, the dog's problem worsened with raw scaling crusts developing on the lips, chin, eyelids, bridge of nose, anus and vulva despite high doses of corticosteroid. Treatment with trimethoprim 480\(^2\) every 12 hours for ten days to control a suspected secondary bacterial involvement proved unrewarding. All medications were discontinued March 18, 1982 and a more thorough laboratory workup was performed March 23, 1982. All laboratory data are summarized in Table I. A diagnosis of pemphigus vulgaris was confirmed by direct tissue immunofluorescence.

By the time the immunofluorescence test had returned, the patient's condition had deteriorated further, to include the pad margins, nail beds and patches of skin on the metacarpus and metatarsus. We discussed options of euthanasia, gold salt therapy, or further antibiotic-corticosteroid treatments with the owner.

On May 13, 1982 we initiated aurothioglucose\(^3\) therapy as outlined previously (1). Two intramuscular injections of 5.0 and 10.0 mg were given as tests of tolerance on May 13 and 20 respectively. The therapeutic series involved six weekly intramuscular injections at 1.0 mg/kg. These injections were given May 27, June 3, 10, 17, 24 and 30. No other therapy was used. A physical examination, weight and discussion with the owner accompanied each injection. Side effects were not observed in association with this therapy. Improvement was noted at the June 17 visit; this improvement continued steadily. Further injections at 1.0 mg/kg were given July 30, August 18, September 9, October 8, November 8 and December 9, 1982. The vast majority of skin lesions had resolved by September and the dog was essentially lesion-free with hair regrowth by December. The patient has remained in good health with the exception of its arthritic hips up to the time of this writing (October 1983).

Discussion

Pemphigus vulgaris is an immunemediated bullous skin disorder in which autoantibodies against intracellular cement substances are believed to reduce the cohesiveness of epidermal cells to one another and to the dermis. As a result, clefts form in the epidermis which coalesce and enlarge to form the characteristic flaccid bullae (2). Clinically, pemphigus vulgaris most often

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1Deltasone 5 mg, TUOCO Products Co., Orangeville, Ontario.
2Tribrissen 480, Burroughs Wellcome Inc., Kirkland, Quebec.
3Solganol, Schering Corporation, P.O. Box 500, Kenilworth, New Jersey 07033.
TABLE I  
SUMMARY OF CLINICAL PATHOLOGY RESULTS PRECEDING AND FOLLOWING AUROTHIOGLUCOSE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Normal value</th>
<th>March 23, 1982</th>
<th>April 7, 1982</th>
<th>July 30, 1982</th>
</tr>
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<tbody>
<tr>
<td>PCV</td>
<td>37-55%</td>
<td>40</td>
<td>74</td>
<td>109</td>
</tr>
<tr>
<td>Platelets</td>
<td>adequate</td>
<td>adequate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RBC regeneration</td>
<td>adequate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metarubricytes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WBC /mm³</td>
<td>6000-17000</td>
<td>9150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutrophils /mm³</td>
<td>3600-11500</td>
<td>7200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Band cells /mm³</td>
<td>0-300</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymphocytes /mm³</td>
<td>1000-4800</td>
<td>650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monocytes /mm³</td>
<td>150-1350</td>
<td>1100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eosinophils /mm³</td>
<td>100-1250</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin scraping</td>
<td>neg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fecal exam</td>
<td>neg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose mg/dL</td>
<td>65-130</td>
<td>86</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>BUN mg/dL</td>
<td>10-30</td>
<td>12</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Creatinine mg/dL</td>
<td>1-2.0</td>
<td>0.7</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Na mEq/L</td>
<td>140-155</td>
<td>154</td>
<td>135</td>
<td>145</td>
</tr>
<tr>
<td>K mEq/L</td>
<td>4.0-5.7</td>
<td>4.0</td>
<td>5.4</td>
<td>4.1</td>
</tr>
<tr>
<td>Ca mg/dL</td>
<td>8.5-11.5</td>
<td>9.6</td>
<td>10.3</td>
<td>10.9</td>
</tr>
<tr>
<td>P mg/dL</td>
<td>3.0-7.0</td>
<td>3.7</td>
<td>5.2</td>
<td>3.7</td>
</tr>
<tr>
<td>TP g/dL</td>
<td>5.4-7.5</td>
<td>5.2</td>
<td>7.0</td>
<td>6.9</td>
</tr>
<tr>
<td>Albumin g/dL</td>
<td>2.3-4.0</td>
<td>2.6</td>
<td>3.9</td>
<td>3.3</td>
</tr>
<tr>
<td>Globulin g/dL</td>
<td>2.7-4.4</td>
<td>2.6</td>
<td>3.1</td>
<td>3.6</td>
</tr>
<tr>
<td>Total bili mg/dL</td>
<td>0-1.0</td>
<td>0</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>Alk phos I.U. /L</td>
<td>12-84</td>
<td>724</td>
<td>164</td>
<td>96</td>
</tr>
<tr>
<td>SGPT I.U. /L</td>
<td>9-63</td>
<td>267</td>
<td>162</td>
<td>28</td>
</tr>
</tbody>
</table>

Histopathology: acantholysis, cleft formation, possibly immune-mediated

Direct immunofluorescence: strong IgG fluorescence without much C3 deposition

USG- urinalysis 1.026

pH 7.0

Protein mg/dL 30

Glucose g/dL 0

Ketones mg/dL 0

Bilirubin 0

Blood 0

Urobilinogen Ehrlich U/dL 0

appears as patches of crusting, oozing, scaling, alopecia and erythema, predominantly, but not exclusively affecting mucocutaneous junctions. Pruritis ranges from very mild to severe (3,4). Diagnosis is suspected on the basis of history, clinical signs, and histopathology, but is confirmed by direct tissue immunofluorescence (5). Untreated, the course is most often chronic and unremitting, sometimes fatal. The natural remission rate is unknown. Factors controlling the onset and regression of these disorders are poorly understood (5).

The control of autoimmune skin disorders has been attempted using many drugs, including corticosteroids, (1,6), cyclophosphamide (7,8), dapsone (9), methotrexate (10), azothioprine (11), combination therapies (12) and more recently, gold salts (1). Many of these treatments either lack efficacy and/or induce undesirable side effects (1,13,14,15). Gold salts appear to have several physiological effects, but the exact mechanism by which beneficial results are often obtained is still an area of active research. Some of these effects include decreases in the following: lymphocytic proliferation (15) immunoglobulin production (16), epidermal enzyme activity (17), prostaglandin synthesis (17) and phagocytic ability (12). Gold salts also appear to enhance collagen stability and inactivate complement proteins (18).

There is little published research regarding pharmacokinetics of gold compounds in the canine (1,15). In humans, a single injection of gold salts is followed by a decline in blood concentrations by first order kinetics (19). Although the serum half-life of gold salts following a single injection appears to be quite short, gold salts are sequestered in various tissues and excreted from the body very slowly, primarily by the renal route (20). With weekly injections a plateau in serum gold concentrations is not reached for several weeks. This may explain the delayed therapeutic response. In individuals treated with gold salts, relatively high levels are found in the reticuloendothelial system, and rather low levels are detected in the epidermis and adnexa. This would suggest that the site of action of gold salts would be more likely on the immune process, rather than protection of target tissues (20).

Toxic side effects of gold compounds, including dermatitis, stomatitis, allergic reactions, nephrotic syndrome and other signs, have been reported in human medicine, but experience with canine patients is still somewhat limited (1,15). Among the reported side effects in dogs, are thrombocytopenia and hemorrhage (14). When side effects occur, they are most often mild and occur soon after initiation of therapy (21). Reactions are most commonly treated by stopping the gold injections and instituting corticosteroid, dimeracrol and/or D penicillamine (22). Most gold salt treatment protocols recommend test injections with gradually increasing dosages to detect variations in patient tolerance (1). It would appear from early reports that many individuals are more successfully managed with gold salts than with other therapies, and may be more likely to achieve total and sustained remissions (1,15). Unfortunately, the expected duration of remission achieved by the use of aurothioglucose is as yet unknown.

Elevations of liver enzymes are known to occur with corticosteroid therapy and may also be seen with the use of sulfa drugs such as trimethoprim. We believe that the elevated alkaline phosphatase and transaminase seen in this patient are due to these drugs inasmuch as the values returned toward normal after these drugs were withdrawn.

Since the naturally occurring remission rate of pemphigus vulgaris is unknown, we do not see the recovery after aurothioglucose therapy as proof of a cause and effect relationship. These diseases are difficult to study because of their unpredictable nature, infrequent occurrence and the inability to produce the condition experimentally. More research and expe-
rience with gold salt therapy will be needed to ascertain its true value in the treatment of this condition.

References

BOOK REVIEW


It is eight years since the first edition of this book was published. A second edition has now appeared, intended to provide an updated collection of surgical procedures for the practicing veterinarian.

The textbook has the same organization as the previous edition: two main parts on soft tissue and orthopedic procedures, each with its own consulting editor. Each part is subdivided into sections on major body systems, and these are divided in turn into chapters dealing with individual organs or disease conditions.

A number of new sections have been added, including ones on burns, trauma, electro surgery technique and suture materials. In addition, many of the contributors are new, and while some chapters, such as the one on pharyngostomy tube use, remain unchanged from the first edition, most are considerably altered. The result is an increase in size by more than two hundred pages. There are also three hundred new illustrations, mainly clear and accurate line drawings.

Many familiar names from the American College of Veterinary Surgeons appear amongst the 129 contributors, and because each article represents an opinion on an often controversial topic, there will naturally be disagreement with some of the recommendations given. As the editors state though, this does not detract from the book's value, and a short reference list after each chapter provides a means for the reader to make his own assessments.

As with the first edition, the textbook is not, nor does it claim to be, encyclopedic. One new section on surgical techniques for exotic species contains only two mammalian chapters, one on feline onychectomy, the other on anal sac removal in ferrets. The remaining chapters are devoted to avian surgery.

While the practitioner will thus require a more basic textbook as an adjunct, this new edition will still prove an invaluable addition to his library. J. Cockshutt.