COMPARATIVE RESULTS OF COPPER SALTS AND GOLD SALTS IN RHEUMATOID ARTHRITIS

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Twenty years' experience has established the value of gold salts in the treatment of rheumatoid arthritis and allied conditions. Six years ago the present author began to try out copper compounds as a complement, and the use of one or the other of these metals has improved our therapeutic results.

Chrysotherapy

The following schedules of treatment have been established over the past fifteen years :

1. The series of injections should consist of small or moderate doses of 0.05, 0.1, 0.2 g. (for gold salts), given at intervals of from five to seven days, mostly by the intramuscular route.

2. The total amount of gold salts for one series should not be less than 1 g. or more than 1.5 g. (average 1.2 g.).

3. The intervals between each series should not exceed six weeks between the first two series, and two, three, or four months between the others, the spacing depending upon the condition of the patient.

4. The treatment should be continued for months or even years as long as the arthritis is advancing and the sedimentation rate is high. It should not be decided to end treatment as long as one of these conditions remains.

5. When treatment has been completed the condition of the patient and the sedimentation rate should be tested every three months in the first year and every six months in the two following years. If articular involvement reappears, or if the sedimentation rate rises (even with no symptoms), treatment should be resumed immediately.

This scheme is essentially different from that of some American authors, who give minimal doses without any interruption over very prolonged periods, and from that of K. Secher, who injects progressively increasing doses, up to 0.5 or 1 g., until a skin reaction is produced.

Copper Therapy

The introduction of copper salts has not fundamentally altered the above principles, but the author

has adapted them to the special qualities of these compounds.

Since 1942 the author has used the intravenous route for sodium-meta-(allylcuprothiocarbamido)-benzoate (Cupralene : 19.85 per cent. copper), with a dosage of 0.25 to 0.50 g. for each injection given twice a week, and a total of 2.50 to 5 g. for each series. Since 1945 the author has also used by the intramuscular or intravenous route diethylamine-(cupro-oxyquinoleum)-sulphonate (Dicuprene 6.5 per cent. copper), at a dose of 0.5 g. two or three times a week, with a total dosage of 6 to 9 or 12 g. for each series. Intervals between the series of copper injections should not exceed two months as a rule, since the excretion of these salts is quicker than that of gold salts.

Comparative Results of Copper Therapy and Chrysotherapy

In the treatment of a chronic group of diseases such as rheumatoid arthritis the assessment of the clinical results is of value only if it covers a prolonged period—at least two years, and if possible more. It is well known that progress is not continuous but subject to partial remissions. The importance of spontaneous remissions has, however, been greatly exaggerated by many authors, especially in the United States. Such remissions generally consist in functional improvement, with persistence of clinical signs, and they never last very long. For these reasons, and owing to the length of time necessary for useful observations, control cases are often of little value, since conditions vary from case to case.

We have limited our statistical studies to a few cases observed for over two years, and these have appeared to confirm our clinical impressions. From the Tables, which deal exclusively with true rheumatoid cases, we can draw the following conclusions :

1. In early cases, below one year's duration (Table 1), copper salts (particularly Cupralene) given by the intravenous route give better results

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TABLE 1

EARLY CASES (LESS THAN A YEAR'S DURATION)

Treatment	Cases	Very good		Good		Medium		Failures	
		No.	%	No.	%	No.	%	No.	%
Gold	8	4	50	2	25	1	12.5	1	12.5
Cupralene ..	12	5	41.7	7	58.3	0	—	0	—
Dicuprene ..	5	0	—	5	100	0	—	0	—

TABLE 2

OLDER CASES (MORE THAN A YEAR'S DURATION)

Treatment	Cases	Very good		Good		Medium		Failures	
		No.	%	No.	%	No.	%	No.	%
Gold	42	21	50	5	12	13	30.9	3	7.1
Cupralene ..	17	7	41.3	3	17.6	3	17.6	4	23.5
Dicuprene ..	31	5	16	16	51.6	4	12.9	6	19.4

than gold salts. The sooner they are used the better and quicker are the results. Copper salts are the best treatment during the subacute period when sulphonamides and antibiotics have failed to stop the advance of the disease.

2. In cases of intolerance to gold salts, copper salts can be very useful since they can be used even in the event of skin rashes, stomatitis, albuminuria, etc.

3. In cases of chryso-resistance, and in patients who no longer respond to repeated series of gold salts, their action is not so certain, but they should be tried, and sometimes, even when they are not themselves directly effective, they resensitize the patient to gold salts.

In addition to rheumatoid arthritis, copper salts have proved of value in allied conditions.

We have been satisfied with the treatment of chronic polyarticular synovitis with effusion, which seems to be a definite clinical entity. This condition, associated with a high sedimentation rate and sometimes with marked anaemia, is resistant to gold salts. In 80 per cent. of our cases the effusion has entirely or almost entirely cleared up after two or three series of injections of copper salts.

Certain cases of chronic polyarticular gout, which is often confused with rheumatoid arthritis, responded favourably to small doses of copper salts, as they do to gold salts, though the blood uric acid is not more influenced than by colchicum.

Our first attempts with ankylosing spondylitis

were less successful; but since we have raised our dosage and kept to a very strict regime in the course of injections we have had better results.

Psoriasis arthropathica, which is so closely allied to rheumatoid arthritis, generally responds to copper salts, and we shall report several cases later in which an astonishing improvement took place in both skin and joint changes.

At present we cannot exactly state the value of copper salts in infectious arthritis of known or unknown origin, or in rheumatic fever.

Whenever the sedimentation rate could be measured regularly (none of our cases was hospitalized for the full course of treatment) it was found to correspond more or less closely with the clinical improvement. Rapid fall of the figures, sometimes from 80 to 10 mm. in two or three months, was observed in early rheumatoid arthritis. These data were controlled by the Resorcin flocculation test (Vernes) and the dosage of haptoglobin (Polonowsky) whenever possible.

Accidents

In the past ten years severe accidents with gold salts have in our own experience become very rare. This can be attributed to a proper dosage, and to careful teaching of both patient and nurse so that they will recognize the earliest symptoms of intolerance. Severe accidents can be controlled successfully with BAL and by sodium thiomalate, a compound which can also be used simultaneously

with gold salts in hypersensitive cases, to avoid reactions.

Copper salts, even with the doses mentioned above, do not as a rule cause untoward reactions. Shock may occur after an intravenous injection if the compound has not been completely dissolved. Slight transitory malaise and nausea are occasionally reported. We have observed three cases of slight jaundice, but practically no skin trouble, no albuminuria, and no thrombopenia.

Conclusions

1. Copper salts are effective in the treatment of rheumatoid arthritis. They give better results than gold salts in the early stages of the disease.
2. In cases of longer standing they must be used if there is chryso-intolerance or chryso-resistance ; but whenever gold salts are tolerated they are to be preferred.
3. In chronic polyarticular synovitis and in psoriasis arthropathica they rank among the best treatments.
4. Their tolerance is superior to that of gold salts.
5. No copper therapy should be judged before

three series have been given under the conditions described in the article.

Les Sels de Cuivre et les Sels d'or dans la Polyarthrite Chronique Evolutive (Etude Comparative)

RÉSUMÉ

Les sels de cuivre ont montré leur efficacité dans le traitement de la polyarthrite chronique évolutive.

A la période de début, ils donnent des résultats plus rapides et plus complets que les sels d'or. Dans les cas plus anciens, ils peuvent être utilisés avec grand bénéfice en cas d'intolérance aux sels d'or. En cas de résistance à la chrysothérapie, leur efficacité est moins démontrée, dans les cas anciens. Des résultats particulièrement encourageants ont été obtenus dans deux syndromes cliniques particuliers :

1. Le rhumatisme psoriasique où le cuivre agit parfois remarquablement sur les arthropathies et même sur sur la dermatose.
 2. Dans l'hydropisie polyarticulaire chronique, syndrome très spécial, où l'or s'était révélé peu actif.
- La tolérance aux sels de cuivre est habituelle et aucun accident sérieux n'a été rapporté.
- Avant de juger de l'efficacité des sels de cuivre, il est nécessaire d'avoir pratiqué trois séries entrecoupées d'intervalles de repos selon la posologie décrite au cours de cet article.