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The Medical Use of Leech Therapy in Outpatients: A Survey on 171 case reports

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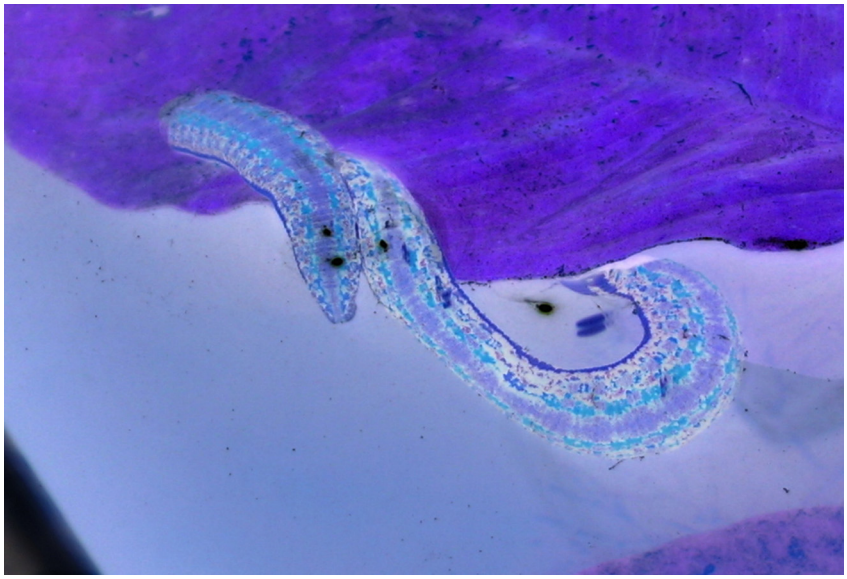
Summary

The medical use of leeches is described in a multitude of individual medical records, compendium articles, and clinical study reports. The present article refers to a first-time survey in Germany comprising 171 questionnaires from 88 physicians and nonmedical practitioners in an outpatient setting. The study sample included 150 patients with various diseases undergoing leech therapy, many of them receiving concomitant medication. The study reports indicated a rapid onset of action with long-lasting therapeutic effects as well as convincing safety data. However, caution is advisable in patients with allergy risks.

The study results suggest that the use of leech therapy should be considered much earlier and not as a late choice treatment. This suggestion is valid in particular for the general practitioner, serving usually as the first patient contact.

Introduction

The history of leech therapy leads back to ancient times, first mentioned in early Egyptian epitaphs. An increasing and exaggerated use of leech therapy took place in the mid 19th century, followed by a period of declining significance in medicine.



Medicinal Leeches on a Leaf (colour alienated) © Dr. rer. nat. Manfred Roth

In the meantime, a revival of leech therapy can be observed, mainly due to the successful use of leeches in reconstructive surgery, in various forms of arthrosis, and in pain treatment. Nowadays, in Germany about 500.000 leeches per year are used for various therapies.

Leech Therapy Documentation

Clinical study reports inform on the use of leech therapy in back pain [9], tinnitus [15], and healing of graft tissue in case of venous congestion in reconstructive surgery [5]. A recent article summarises the outcome of clinical studies in the leech treatment of arthrosis [6]. The use of leech therapy by physicians and nonmedical practitioners is often reported in individual case reports, e.g. [3, 7].

Survey

The German leech farm Biebertaler Blutegelzucht GmbH has carried out a first-time survey in the outpatient setting of physicians and nonmedical practitioners. From March 2006 onwards, the users of leech therapy could participate in this survey, in cooperation with the leech farm or, from 2007 onwards, also in cooperation with the German Society for Leech Therapy and Leech Species Protection (DGTHA).

The questionnaires (www.dgtha.de or www.leech.de) comprised the following documentation:

- Patient data (Age, gender, year of birth, body weight, duration of illness, concomitant diseases and medication)
- Indications of leech ther-

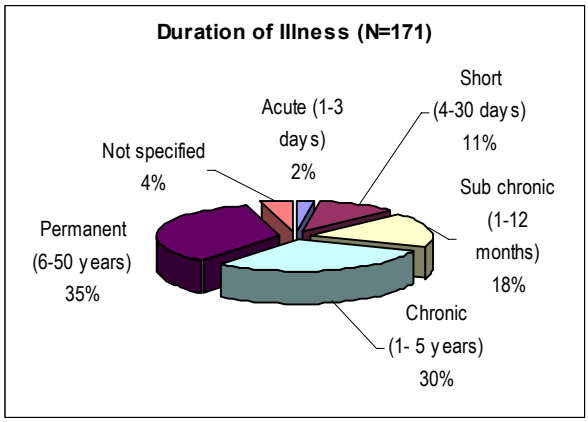


Fig. 1 Duration of Illness

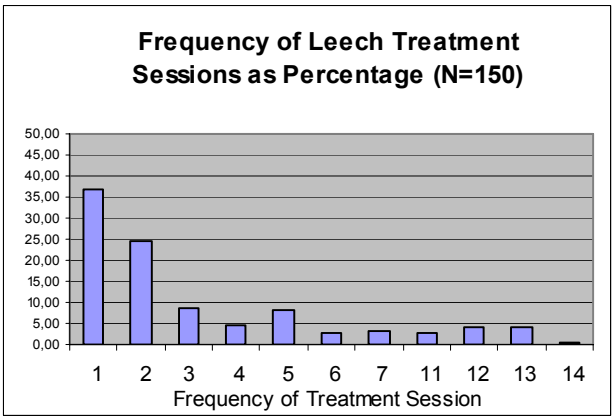


Fig. 2 Frequency of Leech Treatment Sessions as Percentage

apy procedure of leech treatment (insertion and number of leeches)
- Evaluation of efficacy and safety of the leech therapy by the users and the patients
- Early and late patient reactions to the leech treatment.

No selection criteria were given for the patient recruitment. The documentation of the leech treatment of various diseases in the same patient was permitted.

The evaluation of data was restricted to descriptive statistical analysis due to the exploratory quality of the data documentation.

The statistical analysis focussed on:
- Description of the patient sample
- Overview on the indications of leech therapy in the outpatient setting
- Efficacy of the leech therapy
- Safety of the leech therapy/ Adverse reactions.

Patient Sample

Eighty-eight users of leech therapy, 81 nonmedical practitioners and 7 physicians, took part in the survey.

One hundred and fifty patients with various diseases underwent the leech therapy. Some of these patients received this treatment for several diseases (up to 3 diseases per patient), leading to the documentation of 171 case reports in 150 questionnaires. The sample consisted of 105 female (70 %) and 41 male (27 %) patients. No gender specification was given in 4 patients (3 %).(**table 1**).

Table 1: Age and Gender Distribution

age group	female	male	not applicable to sex	total	percentage
25 - 34 years	6	2		8	5,3
35 - 44 years	16	6		22	14,7
45 - 54 years	22	12		34	22,7
55 - 64 years	14	3		17	11,3
65 - 74 years	24	9	1	34	22,7
75 - 84 years	11	2		13	8,7
85 - 94 years	2	1		3	2
not applicable to age	10	6	3	19	12,7
total	**105**	**41**	**4**	**150**	**100**

The age distribution ranged from 28 to 93 years not indicating any focus. However, 33 % of the patients were older than 65 years

The body weight of the patients ranged from 55 to 120 kg. Forty-three percent of the patients were within the normal weight (BMI < 25 kg/m ^{2}). A substantial portion of patients (46 %) was overweight or obese (BMI > 25 kg/m ^{2}).

Indications of Leech Therapy

Table 2 summarizes the various indications of leech therapy, as reported in the case record forms. In these indications, the analgesic, anti-inflammatory and blood circulation-enhancing properties of this therapy were

Table 2: Indications of Leech Therapy

Diagnostic Group[1]	Indication of Leech Therapy	Number
Diseases of the musculoskeletal system and connective tissue (M00-M25/M50-M54)	Osteoarthritis	24
	Osteoarhritis of the knee	15
	Osteoarthritis of the thumb	4
	Arthritis of the knee unspecified	1
	Osteoarthtitis of the sacro-iliac joint	1
	Uratic arthritis	1
	Other arthropathies	1
	Lumbar vertebral syndrome	1
	Sliding vertebra	1
	Total	**49**
Diseases of arteries/veins/lymphatic system (I70-I89)	Varicosis	29
	Thrombophlebitis	6
	Leg ulcer	3
	Micro-angiopathy	2
	Disturbed circulation	2
	Thrombosis	1
	Venostasis	1
	Artery occlusion	1
	Total	**45**
Disorders of soft tissue/muscles/tendon (M60-M79)	Epicondylitis	7
	Rheumatism	6
	Myogelosis	5
	Swelling (inflammatory)	3
	Fibromyalgia	2
	Carpal-canal syndrome	1
	Impingement syndrome	1
	Achillodynia	1
	Achillodynia (chronic)	1
	Achillotendonitis	1
	Patellar tendon syndrome	1
	Tendovaginitis	1
	Shoulder arm syndrome	1
	Bursitis (shoulder)	1
	Bursitis (chronic)	1
	Ankle joint torsion	1
	Total	**34**
Diseases of the skin and subcutaneous tissue (L10-L25)	Haematoma	4
	Furuncle	3
	Oedema	2
	Haemangioma	2
	Wound-healing impairment	1
	Abscess	1
	Shingles	1
	Baker cyst	1
	Cyst	1
	Total	**16**

used.

Preference was given to the leech therapy of musculoskeletal diseases and arthropathies (osteoarthritis, arthrosis, myogelosis, tendinitis), circulatory disorders (varicosis, thrombosis, phlebitis, leg ulcer), and skin diseases (swelling, furuncles, abscesses). The majority of patients (58 %) suffered from concomitant diseases, in addition to the leech therapy indications. These diseases comprised mainly hypertension (14 %) and diabetes (4 %). Forty-six percent of the patients received concomitant medication, such as antihypertensives, analgesics, antirheumatic agents, insulins, oral antidiabetics, thyroid agents, enzymes and vitamins. Fifty percent of the patients did not receive any concomitant medication, and no medication specification was given in 4 % of the patients.

Only a few leech therapy indications were acute affections (Epicondylitis, calcaneal spur, haematoma, lumbar vertebral syndrome) within the first 3 days (**Fig. 1).** Most of the indications were chronic (since 1 to 5 years in 30 %) or permanent (longer than 5 years in 35 %) illnesses. In one patient, the illness lasted for about 50 years (varicosis)

Treatment Procedure

The leech therapy was carried out as first-time treatment in 37 % of the patients (**Fig. 2**). The other patients had received leech therapy before. They had experienced between 2 and 14 previous sessions. In the majority of patients (62 %), two consecutive leech therapy sessions had shown sufficient treatment effects.

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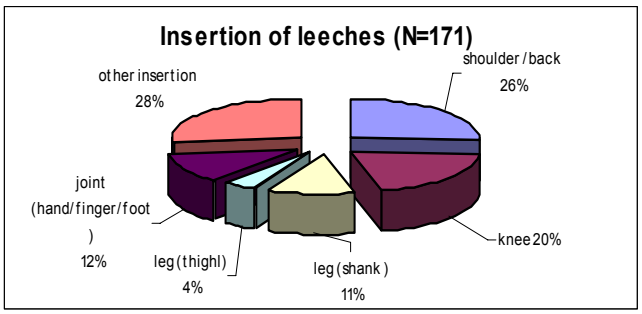


Fig. 3 Insertion of leeches

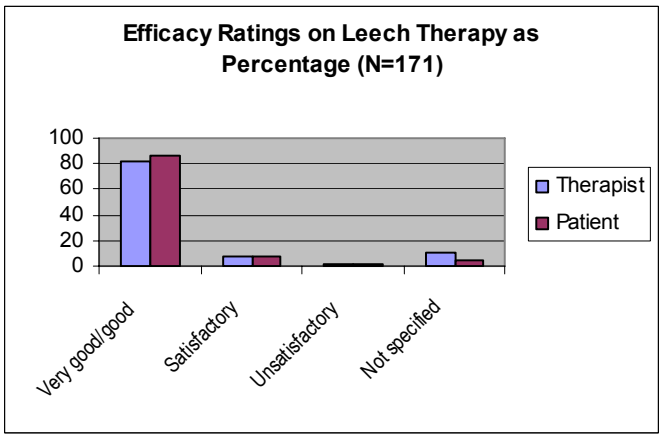


Fig. 4 Efficacy Ratings on Leech Therapy as Percentage

Table 2: Indications of Leech Therapy (continued)

Diseases of the nervous system (G50-G64)	Pain syndrome	2
	Migraine	1
	Neuropathy vestibularis	1
	Ischialgia	1
	Trigeminal neuralgia	1
	Total	**6**
Osteopathies and chondropathies (M80-M94)	Heel spur	3
	Foot fracture	1
	Hallux valgus	1
	Total	**5**
Diseases of inner ear (H80-H83)	Tinnitus	4
	Total	**4**
Inflammatory diseases of female pelvic organs (N70-N77)	Adnexitis	1
	Cystitis	1
	Total	**2**
Diseases of upper respiratory tract (J30-J39)	Bronchitis	1
	Sinusitis (chronic)	1
	Total	**2**
Hypertensive/ischaemic heart diseases (I10-I25)	Stenocardia pectoris	1
	Hypertension	1
	Total	**2**
Metabolic disorders (E70-E90)	Haemochromatosis	2
Diseases of liver (K70-K77)	Liver enlargement	1
Disorders of breast (N60-N64)	Mastitis	1
Diseases of digestive system (K90-K93)	Crohn`s disease	1
Mental disorder unspecified (F99)	Dizziness	1
	Total	**6**
Grand Total		**171**

[1] Diagnostic groups as cited in ICD-10 [4]

Number of Leeches per Session

Mainly 6 leeches (in 19 % of the patients) per session were administered. Furthermore, 4 leeches (17 %), or two leeches (15 %) were used preferentially. Only one leech was administered in 2 % of the patients. The largest number of leeches (N=13) was used in one patient.

Insertion of Leeches

The leeches were administered mainly in the areas of back and shoulder (26 %), knee (20 %), legs (lower leg [11 %], thigh [4 %]), and of the joints (hand, finger, foot [12 %]) (**Fig. 3**).

Efficacy

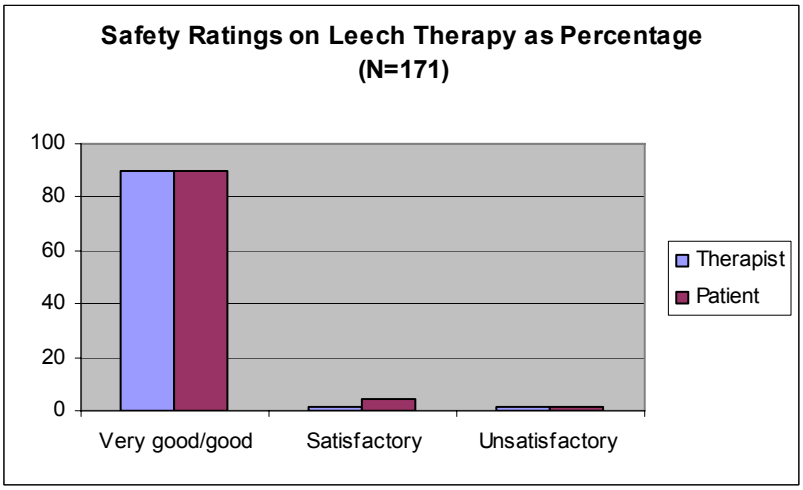
Fig. 4 shows the ratings on efficacy of leech therapy by the users and the patients. Users and patients consistently assessed this therapy as highly efficacious:

Eighty-one percent of the users and 87 % of the patients gave very good or good efficacy ratings. Insufficient efficacy was reported in one case of acute arthritis and mastitis each. In addition to the rating scale assessments, further information on the efficacy of leech therapy can be derived from the rationale

Table 3: Exemplary Statements on the Rationale for Using Leech Therapy and from the Final Clinical Report

Indication	Rationale for using leech therapy	Final Clinical Report
Osteoarthritis	After multiple speculum examinations of the knee, the patient is afraid of a knee-joint replacement. Gastro-intestinal complaints with the intake of analgesics.	After leech treatment nearly free of pain.
Osteoarthritis	Previous conventional treatment not efficacious.	Alleviation of pain.
Osteoarthritis	Analgesics and cortison did no more lead to therapeutic success.	Distinct alleviation of pain after one week.
Osteoarthritis (thumb)	Medication and complementary medicine did not lead to the designated success.	Itching, reddening, „it works“(2-3 days).Onset of pain relief after 4-5 days.
Osteoarthritis (knee)	Patient wants to avoid surgery.	Itching (3 days), subsequently nearly free of pain. Surgery so far not necessary.
Osteoarthritis (knee)	Strong analgesics are not tolerated.	Pain in the knee was strongly reduced after the first session. No more analgesics necessary. Repeated leech therapy anticipated after three months.
Epicondylitis	Cortison injections wer eintolerable.	Free of pain after the first leech session.
Myogelosis	Intake of analgesics for years without remarkable improvement.	After leech therapy free of pain fort he first time.
Varicosis	Vein stripping and medication without sufficient success.	Alleviation in the legs, relief from congestion, improvement of feeling of heaviness.
Varicosis	Prevention of surgery.	Reduction of spider veins and a lymph oedema. Reduction of pain.
Varicosis	An appointment for vein stripping had already been scheduled.	Immediate reduction of pain. Varicoses distinctly reduced. Treatment area has become plane.
Venostasis	Patient was scheduled for surgery.	After leech therapy, no more surgery was necessary.
Thrombosis	Heparin injections (4 weeks daily) did not lead to improvement.	The swollen leg slightly had ebbed away the first day after treatment. After 6 days, the leg is normal.
Phlebitis	Treatment medications (Heparin, analgesics) of various physicians were unsuccessful.	Pain reduction, no more feeling of heaviness (day 1). Pain free the first time since 25 months.
Haematoma	Patient was scheduled for surgery.	No more discomfort after leech therapy. Patient cancelled the surgery appointment.
Haematoma	Movement constraint (knee). Surgery suggested.	Complete mobility after 14 days. Reduction of swelling.
Leg ulcer	No response to oral medication. Risk of lower leg amputation.	Improved circulation, Gradual decline of leg ulcer.
Leg ulcer	Blood flow stimulating medication induced stomach pain and vomiting.	Patient could walk a longer distance after leech therapy.
Cyst (finger)	The treatment of choice in this cyst is surgery. Risk of acampsia.	The cyst is gone. The finger is completely flexible and free of pain.

Fig. 4: Safety Ratings by Therapists and Patients



for the treatment decision and from the final clinical findings. In **table 3**, some exemplary statements of the users are shown.

Safety

The safety ratings also indicated rather consistent assessments by users and patients (**Fig. 5**): The leech therapy was rated as very well or well tolerated by 90 % of the users and patients

Table 4: Adverse Reactions to Leech Therapy

Adverse reaction	Number[1]	Percentage[2]
Itching	43	28,7
Local reddening	29	19,3
Prolonged bleeding	19	12,7
Inflammation	9	6
Swelling	7	4,7
Haematoma	7	4,7
Sensation of warmness/heat	4	2,7
Pain with walking	3	2
Initial exacerbation (slight) of epicondylitis complaints	1	0,7
Systemic allergic reaction	1	0,7
Tingling in the wrist (slight)	1	0,7
Circulatory collapse (relieved by the herbal medicine Korodin)	1	0,7
No adverse events	70	46,7
Total	195	100

[1]Multiple nominations possible [2]Referred to 150 patients

Table 5: Detailed Description of the Serious Adverse Events

Indication	Adverse Event and Final Clinical Evaluation
Osteoarthritis (acute),	Systemic allergic reaction with muscle pain, movement pain, rheumatic episode, itching, reddening, pustules.
Allergy (meat and milk products)	No improvement of symptoms.
	Patient reported that she needed several months to cope with these allergic reactions. Presumably allergic reactions to animal proteins.
Varicosis,	Circulatory collapse (Relieved by the herbal medicine Korodin).
Allergic Asthma	Bronchial relief and improvement in the feet.
	Patient resisted for years to the use of leech therapy. Now she is enthusiastic about feeling healthy again and about her ability to walk.

each. Insufficient safety was mentioned by the users in 3 cases, by the patients in 2 cases. These ratings with full details are as follows:

- One female patient suffering from therapy resistant arthritis, did also not respond to leech therapy. This patient was allergic to milk products and meat. Her reactions to the leech therapy were evaluated by the therapist as systemic allergic symptoms (muscle pain, movement pain, rheumatic episode, itching, reddening, pustules).

- The safety of leech therapy in one patient with microangiopathy at the left forearm was rated as insufficient by the therapist and the patient. The reason for this rating was the occurrence of severe swelling, reddening and pain in the area of the leech bites. These symptoms, however, were no more rated as serious in the final clinical evaluation.

- In one case of myogelosis, the therapist rated the leech therapy safety as insufficient during the follow-up period of this treatment. The patient, however, rated the symptoms (local reddening, severe itching) as satisfactory. In the final safety evaluation, these adverse events were no more rated as serious also by the therapist.

Adverse Events

The reports on adverse events are summarized **in table 4**. The most frequent side effects were itching (29 %), local reddening (19 %), and prolonged bleeding (13 %). These reactions usually were reported for the day of treatment. Later on, itching and local reddening were the main adverse events. The adverse events had faded away after 1 to 3 days in 51 % of the patients. In the majority of patients (77 %), the adverse events had disappeared in the course of the first week after treatment. However, some patients still reported adverse events up to 14 days (19 %), in one patient each adverse events were recorded until day 21 or day 28 respectively. The above mentioned female patient with therapy resistant arthritis complained for many months about adverse events. These adverse events had been rated as serious. Further serious adverse events were observed in another patient with varicosis (**table 5**). Both patients suffered

from allergy (meat/milk protein) or asthma respectively. Forty-seven percent of patients did not report any adverse events.

Discussion

This survey provides information on treatment procedures and the evaluation of efficacy and safety of leech therapy in an outpatient setting. The results derived do not allow to draw general conclusions due to methodological pitfalls in this study (e.g. formation of the study sample). However, they give evidence for the elaboration of study hypotheses for further research.

Therapeutic Success in Inflammation, Swelling and Pain

Therapists and patients in accordance rendered very good or good efficacy and safety ratings in orthopaedic diseases with inflammatory and painful symptoms leading to movement impairment. Further successful treatment effects with good tolerability were observed in inflammation, swelling and pain associated with varicosis, leg ulcer, oedema, haematoma, post-operative complaints or inflammatory and painful dermatologic diseases. These results are in good agreement with the literature findings on efficacy and safety of leech therapy, documented in monographs, individual case reports or clinical studies [1, 3, 7-11, 13, 14, 16].

Promising Safety Profile

The reports on the safety of leech therapy indicated a very good or good safety profile. The adverse event reports mainly referred to skin reactions (itching, reddening) and prolonged bleeding. These symptoms are strongly related to the mode of action of leech therapy:

Itching, reddening and local increased blood circulation can be interpreted as reactions to the histamine-like ingredients of the leech saliva. The prolonged bleeding is due to the saliva ingredient calin, leading to the blood loss effect of leech therapy as an intended target of this treatment. The persistency of the adverse events reddening and itching lasted up to 28 days following leech administration. The literature gives evidence of rare cases of retarded occurrence of these skin reactions after a symptom-free period. This reoccurrence of symptoms was observed in relation with massages using essential oils or with sauna visits. These symptoms have been observed even months after leech therapy in very rare exceptional cases [2, 8].

The interpretation of these symptoms as allergic reactions is debated controversially in the literature [12, 13].

The two cases of serious adverse events were observed in allergy patients demanding for special caution with the use of leech therapy in patients with distinct allergic reactions to animal proteins.

Conclusion: The Timely Use of Leech Therapy

The survey clearly indicates that leech therapy is often used as a very late treatment of choice in patients with chronic diseases.
The literature evidence on the promising therapeutic opportunities of leech therapy as well as the results of the present survey clearly warrant the use of this treatment at much earlier stages. This is valid in particular in cases of medication intolerance (e.g. gastro-intestinal discomfort with nonsteroidal analgesics) or if surgery options (e.g. vein stripping in varicosis) are considered. The proper determination of the place of leech therapy within the medical armentarium has to be elucidated further by the ongoing accumulation of information about this treatment. This running process of gathering evidence is expected to facilitate a profound appraisal which can neither be the mere overestimation nor a complete disaffirmation of the leech therapy.

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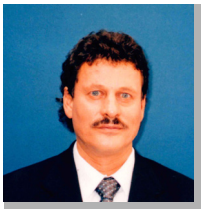

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