

Articles, Views and Comments



To join the European or the International Society of Cryosurgery or if you would like to contribute to the next issue, your articles, views and comments would be most welcome.

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CRYOSURGERY

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Welcome



I hope you have all had a pleasant year.

The year 2000 has been a successful one in the use of Cryosurgery for the therapeutic and palliative treatment of malignancy. Cryosurgery has continued to advance particularly in the fields of hepatic and prostate cancer. The application of Cryosurgery in the treatment of benign tumours and granulation tissue formation following heart/lung transplantation has also progressed, Cryoanalgesia for the control of pain has been popularised. There will be a Congress on this subject in CHINA mid-May 2001.

On the administration and organisational side I am pleased to report the membership database has been up-graded the total number of members to date now stands at 375.

There have however been some disappointments. From the last meeting the suggestion for the creation of a library has not been fulfilled as very few members have sent in copies of their publications. Also the membership fee of \$50 per year has not been levied.

The Presidents and Board of Directors strongly urge you to participate in the next Combined Meeting of the International and European Societies of Cryosurgery, to be held in Lisbon, Portugal on 5th-7th October 2001.

- Lisbon is a beautiful city and Autumn is a good time of year to visit. Prior to the Meeting there will be two days of practical and teaching sessions.
- We hope you will take this opportunity to combine this esteemed scientific meeting with a family holiday.

It is important for the success of the meeting that as many people as possible attend. We therefore invite you to participate in the meeting, to represent your country and share your experiences of Cryosurgery with a wider scientific community.

The International and European Societies of Cryosurgery welcome the active participation of Cryotechnological companies in the next meeting.

The Board of Directors of both Societies wish you all a happy and prosperous New Year.

Section 4



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International and European Conference of Cryosurgery



Lisbon, Portugal
October 5th-7th 2001



Lisbon is a beautiful capital city , rich in maritime history and culture. The city is built on a series of seven hills around a natural harbour on the river Tagus and retains much of its old character. There is a large selection of restaurants and bars serving local and international cuisine with fish and seafood particular specialities. See page 20 for more details

Section 1

Original Article



CRYOTHERAPY IN THE CURATIVE TREATMENT OF EARLY STAGE LUNG CANCERS

Prof JM Vergnon

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Superficial, radiological and occult lung tumours can be divided into three categories:

- 1) "In situ" tumours without invasion of the basal membrane [20%].
- 2) Early superficial carcinoma including all tumours without invasion of the lamina propria [in situ + pre-invasive lesions] and limited in surface [1-2 cm²]
- 3) Radiological occult lesions including more invasive tumours but limited at the bronchial wall.

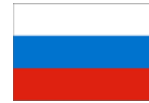
Surgery is the conventional choice of treatment. Following surgical treatment, tumour resection is then completed with control of the true invasion of the bronchial wall and analysis of lymph node involvement. However there are several points that need to be taken into consideration.

- The evolution from "in situ" to invasive lesion is not always constant.
- Lymph node extension is not observed when superficial lesions are less than 3 mm [1] and with "in situ" lesions due to the absence of vascularisation or lymphatics in the epithelium.
- Surgery is often not possible in patients with COPD.
- Publicised data results for surgery in these cases contradict with five year survival ranging from 50 to 73.8%. In this case, the parenchyma amputation was severe [lobectomies or pneumonectomies] and data on limited resections is not available.
- The study showed that there is a very high risk of recurrence of cancer (5%) per year.

Endoscopic treatment is another option for the treatment of cancer. Sparing pulmonary parenchyma, there is the risk of underevaluation of the intensity of tissue invasion. In addition there is always the possibility of missing lymph node

Section 3

Future Events



The International Symposium: **ADVANCES IN CRYOMEDICINE**

(Second announcement)

June 7-8 2001

St.-Petersburg, Russia

The Symposium will be held to inform Russian surgeons and oncologists of recent achievements in cryotherapy and cryosurgery of malignant tumours of various locations. Lectures, clinical demonstrations, live cryosurgical workshops, video and poster presentations, discussions and debates are planned.

The invitations, preliminary and final program, registration form, visa support, application for accommodation in a hotel can be taken from our web-site.

The chairman of the Symposium is The President of the European Society of Cryosurgery Mr M.O.Maiwand (Great Britain). Committee chairmen: Prof. S.Sumida (Jp), Prof. N.Korpan (Aus), Acad. PAMS Prof. A.M. Granov, Prof. B.I.Alperovich (Rus).

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First Announcement

COMBINED MEETING

OF THE

INTERNATIONAL

AND

EUROPEAN SOCIETIES

OF CRYOSURGERY

Friday 5th to Sunday 7th October 2001

LISBON

PORTUGAL

The International and European Societies of Cryosurgery were formed to bring together cryosurgeons and cryopractitioners from around the world to share experiences and results in the fields of cryosurgery, cryotherapy and cryobiology.

The meeting will include a whole range of activities; oral presentations, workshops, discussion seminars, exhibitions and video sessions. Should anyone wish to participate or attend this well organized combined meeting then they should contact Mr MO Maiwand.

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involvement. The endoscopic follow-up must involve detection of the possibility of local recurrence or the presence of another tumour

There are an additional six methods that are available as a choice of treatment for luminal cancer: local excision, cryotherapy, laser, electrocautery, photodynamic therapy and brachytherapy.

Local Excision; is used in only a few cases as the technique is restricted to small and well limited lesions.

Nd YAG Laser presents a high risk of perforation or residual structure due to the unselective interaction between the laser beam and the tissue. However, Cavaliere (2) with a special technique of surface carbonisation obtained good results.

Cryotherapy, is in this instance, an excellent method of treatment. Cytotoxicity is specific, sparing collagenous structures. The spheric action allows treatment of infiltrative lesions and can treat tumours that have a depth of 4-5 mm in the bronchial wall. Side effects are very rare. We have conducted a multicentre prospective Protocol (3) on cryotherapy in early superficial tumours (35 patients and 44 lesions). Forty two percent of these patients had previously been treated for an ENT or lung cancers and 22% of them presented another localisation at follow-up. We have obtained 91% cure at one year and 72% at three years. Ten recurrences were recorded and were associated with poor limitation of the lesion or distal locations. Six of them, were inoperable and had become invasive with fatal result. The mean survival of the whole group was 50 months.

High Frequency Electrocautery was tested on radiological occult tumours by Sutedja (4). Thirteen patients were treated. A follow-up study showed 80% of patients being disease free 18 months.

Photodynamic Therapy seems to be a good, but expensive method (double lasers) to treat early stage cancer.

The efficacy is based on the concentration of the sensitizer in tumoural cells and the diffusion both in surface and 5 mm under the surface. Different sensitizers have been tested such as Photofrin*, ALA or mTHC. The Photosensibilisation ranges between 4 to 8 weeks. Hayata team in Japan treated 35 "in

Section 1

Original Article

situ” with a response rate of 80% (5). Edell treated 13 patients with 77% of cure at 5 years (6). In 1994, Imamura cured 64% of 39 localisations on 29 patients. Lam used ALA on 6 patients and Savary with mTHC in 1997 obtained 83% cure at 14 months.

HDR Brachytherapy allows efficient irradiation of the bronchial wall and peribronchial areas. Generally, 3 to 6 sessions were performed, each of them delivering 7 Grays at 1cm from the catheter. This method is expensive, induces delayed necrosis and in some cases severe complications. However, in comparison to the other methods, it is able to treat a deeper invasion of the bronchial wall (but without control of lymph node, extension is frequent here). Brachytherapy with curative intent was tested in on radiological occult lung cancers in different trials published by Tredaniel (7), Perol(8) and Taulelle. Initial control of 72% to 83% was reported with a median survival of 2 years or slightly more.

Endoscopic techniques are efficient in the treatment of early stage lung cancer and spare parenchyma in these multifocal pathologies. Initial results seemed similar (about 80%) but device costs and side effects were very different. Photodynamic therapy increases surface treatment and brachytherapy increases in depth the curative action but both dramatically increase the side effects in these limited tumours. Cryotherapy in this large trial, gave an excellent efficacy/side effect ratio and seems the best treatment in well limited superficial tumours that are less than 4mm depth.

REFERENCES

- 1.Nagomato N, Saito Y, Ohta S et al. Relationship of lymph node metastasis to primary tumour size and microscopic appearance of roentgenographically occult lung cancer. *Am.J. Surg. Path.* 1989;13: 1009-1013.
- 2.Cavaliere S, Foccoli P, Farina PI. Nd YAG laser. Bronchoscopy; a five-year experience with 1396 applications in 1000 patients. *Chest* 1988; 94: 15-21.
- 3.Deygas N, Froudarakis ME, ozene G, Jouves S, Fournel P, Vergnon JM. Cryotherapy in early superficial bronchogenic carcinoma. *Eur. Respir. J.* 1998; 12 (sup 28): 266 S.

Section 3

Future Events



38th Meeting of the Society for Cryobiology In association with the Society for Low Temperature Biology

29th July to 1st August 2001

University of Edinburgh, Scotland

The Society for Cryobiology is an international scientific society that aims to promote and disseminate in the field of low temperature biology and its applications.

The programme includes a workshop on the Scientific Basis of Cryosurgery and its Applications chaired by Dr Andy Gage (SUNY) and Dr John Bisch (University of Minnesota). This will cover present day uses of cryosurgery and current research in the field, including the basic features of freezing injury produced by cryosurgery and basic and clinical research. Contributed papers on related subjects are invited.

Further Information

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Section 2

Conference Reports

freeze and slow thaw involved in cryosurgery followed by some interesting clinical cases. Mr Bose showed the benefits of "Direct Cryosurgery in Inoperable Non Small Cell Lung Carcinoma" particularly in terms of improved quality of life to pre-terminal and terminal lung cancer patients.

Refreshed by lunch, we split up into two workshops. Whilst one group discussed videos on hepatic and endobronchial cryosurgery, the other received from me a quick slide presentation on the appropriate selection of benign and malignant skin lesions for cryosurgery and from Dr Buckley, a very helpful "hands on" demonstration on the instrumentation and techniques employed in cutaneous cryosurgery.

The first afternoon paper was from Mr K Siafakas from Greece who presented a case report of a 38-year old man with an endobronchial carcinoid tumour who had chosen cryotreatment rather than pneumonectomy. He returned to work with much improved lung function and after 3 years follow-up, was found to be tumour free. At this point in the day's programme I addressed the delegates on the "Role of Cryosurgery in the Management of Lentigo Maligna" a slow-growing, pre-invasive, malignant melanoma usually presenting as a relatively large lesion on the sun-exposed area of the face in older patients. The treatment options were discussed. The cryosurgery option, increasingly used with increase in age of the patient and taking into account the other options available in busy DGH dermatology depts, was debated. The importance of explanation to patients, correct technique and an adequate cryosurgery regime was emphasised. The day's presentations were completed with a paper by Mr Asimakopoulos of the Hammersmith Hospital on the "Analysis of the Outcome of Cryosurgery for Malignant Endobronchial Tumours". Clinical parameters were found to improve significantly after cryosurgery. Cryosurgery combined with radiotherapy was also associated with prolonged survival.

The Symposium proved to be very informative, enjoyable and the quality and content of the presentations was of a very high standard. However, if we are to develop and grow as an association, we need to attract more participants from other medical specialties. If anyone or knows of a colleague who might become involved please contact me or Mr Maiwand. We plan to have another Symposium in December 2001.

Section 1

Original Article

4. Van Boxem TJ, Venmans BJ, Schramel FM, Van Mourik JC, Golding RP, Prostmus PE, Sutedja TG. Radiographically occult cancer treated with fiberoptic bronchoscopic electrocautery: a pilot study of a simple and inexpensive technique. *Eur. Respir. J* 1998;11:169-172.
5. Okunaka T, Kato H, Konaka C et al. Photodynamic therapy for multiple primary bronchogenic carcinoma. *Cancer* 1991;68:253-258.
6. Edell ES, Cortese DA. Photodynamic therapy: its use in the management of bronchogenic carcinoma. *Clinics in Chest Medicine*. 1995; 16: 455-463.
7. Tredaniel J, Hennequin C, Zalcmann G, Walter S, Homasson JP, Maylin C, Hirsch A. Prolonged survival after high dose rate endobronchial radiation for malignant airway obstruction. *Chest* 1994; 105:767-772.
8. Perol M, Caliandro R, Pommier P, Malet C, Montbarbon X, Carrie C, Ardiet JM. Curative irradiation of limited endobronchial carcinomas with high dose rate brachytherapy. *Chest* 1997; 111: 1417-1423.

Section 1

Original Article



PANCREAS CRYOSURGERY: PHENOMENON ' MOON DARKNESS' AN ANIMAL STUDY

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Background; The Freezing process in healthy and tumourous human livers was studied. Since analgesia is a direct result of freezing, cryosurgery may become a significant adjunct in the treatment of inoperable pancreatic neoplasms.

Objective; To define the *in vivo* sensitivities of pancreas parenchyma to different cryosurgical exposures and to define the minimum temperature required to cause adequate cryodestruction and thus prevent tumour recurrence.

Material and Method; Fourteen half-breed dogs, weighing 12-14 kg were used in this investigation. General anaesthesia was induced by an intravenous injection with 0.2 mg/kg body weight of Ketalar 50mg/ml (Berlin) and Xyla (Holland) in a 1:1 ratio. The pancreas was exposed by laparotomy. Cryosurgical exposure was achieved by the circulation of liquid nitrogen through insulated probes (universal Cryosurgical system, freeze power 1, Cryomed Int Inc, Bellmore, NY, USA). A disc probe of 15-mm diameter was placed on the pancreas. Cryoexposure temperatures of -60°C and -180°C were selected for contact with pancreas parenchyma with temperature stabilisation of ± 1 %. A 9 minute freeze, followed by complete thawing of the pancreas, was used for each freeze-thaw cycle. Monitoring of the progress of the freeze-thaw cycles was carried out by intraoperative ultrasound during cryosurgery.

Results; Each cryolesion was observed for a 10 minute period after thawing. For the first time, macroscopically the following phenomenon was observed, which we called "moon darkness." Immediately after freezing, during thawing, the snow white, hard frozen ice-block pancreas parenchyma which seemed like a round moon figure with a sharp

Section 2

Conference Reports



Association of British and Irish Cryosurgery - ABIC 2000 First Annual Symposium, December 2000

Dr Arthur Jackson
GP Dermatological Cryosurgeon, ABIC Steering Group



As acting Chairman for the day, I did not feel I could let the opportunity go past without some comment on, or summary of the Symposium. Mr Omar Maiwand, from Harefield Hospital, started the day appropriately with a historical perspective of the use of "Cold in Medicine". It is fascinating to note that the observations made by John Hunter in 1777 stated "The local tissue response to freezing includes local tissue necrosis, vascular stasis and excellent healing" -virtually the whole basis of cryobiology clearly expounded over 200 years ago! It was very fitting that our next speaker was Dr Barry Fuller, from 'The Royal Free' and Editor of the Journal of Cryobiology who gave us a very informative presentation on cryosurgery at a cellular level. This was reinforced by discussion and also stimulated debate on the role of immunology in cryosurgery.

Looking at the clinical benefits of cryosurgery, Dr David Buckley, a leading GP Dermatologist and Cryosurgeon from The Ashe Clinic in Co Kerry, gave a stimulating and comprehensive talk on "Advanced Cutaneous Cryosurgery". Using a superb dual slide presentation we were shown the before and after shots in the management of many examples of non-melanoma skin cancer. Instrumentation and techniques were explained, as were the rules, side effects and pitfalls in achieving the best outcomes.

After coffee, Mr Huang from the Chelsea & Westminster Hospital, turned to the use of "Cryotherapy for Hepatic Metastasis". This excellent paper showed that dual-probe was more effective than single-probe cryotherapy for colorectal liver metastasis. The dual-probe also produced a greater fall in serum carcinoembryonic antigen (CEA), indicating more effective tumour destruction and better survival.

Mr Maiwand and Mr Amal Bose from Harefield Hospital spoke on the use of cryosurgery for inoperable lung cancer. Mr Maiwand gave a clear illustration of the crucial cellular and tissue changes and effects of the rapid, low-temperature

Section 1

International Review

tissue destruction compared to controls. The success of this combinational treatment was seen when 500 children who had angiomas gave a 95% success rate.

In certain patients, due to the difficult anatomical localization of the hemangiomas, we employed cryosurgery, with another technique for treatment. Out of 52 children, 50 had embolisation of the hemangiomas followed by cryosurgery, with preliminary exposure to microwave irradiation. Two children were cured by endovascular embolisation, excision of hemangioma and cryodestruction. We have so far, had no recurrences in the last 10 years.

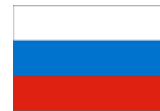
Adults and children suffering from keloid scars of the skin were treated with cryosurgery and microwave exposure and cryosurgery alone. The cryogenic method was very effective when necrosis was found to be superficial and the treatment was of long duration. The combinational method also significantly improved results of the treatment. Analysis has demonstrated, in a study of 351 children, microwave and cryotherapy to be 2-4 times more effective than cryosurgery alone.

Section 1

Abstracts

demarcation line, gradually took its rubin stone colorability and consistency hemispherically increasing from the vascular side of periphery. The snow white cryogenic lesion always dissolved in the same way. Besides this, the avital irreversible asepyical cryonecrosis started to form with a sharp demarcation border. Further, the histochemical study of freezing the pancreas in the dogs showed that the frozen pancreatic tissue was completely destroyed and replaced by granulation tissue.

Conclusion; The present study, involving a healthy pancreas parenchyma macroscopically and morphologically, showed the mechanism of the freeze-thawing processes with different temperature histories at -60°C and -180°C , on the pancreatic tissue. The endothermic transformation of the cryogenic lesion in the pancreas parenchyma after freeze-thawing is strongly correlated to the different



SOME THEORETICAL ASPECTS OF CRYOSURGERY

E N Borkhunova, V.V Shafranov, A.V Taganov, D.I Tsyganov.
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The advantages of cryosurgery are known and it seems natural to expect that the power of freezing helps to destroy a large area of biological tissue. The analysis of the mechanism of cryo-destruction has shown the basic process of destruction is limited by the formation of ice at the level of microcirculation because of the high density of biological tissue, $10^{10} - 10^{12}$ cells per cm^3 . Since biological thermal resistance is high, in order to estimate the area of destruction, it is much better to take into consideration the heat from all the human body mass. It is the main reason for the lack of success in local freezing of large zones of pathological tissue. While analysing published data on curves of freezing we have constructed a generalized curve for all regimes of cryoapplications. Effective time of cryodestruction is not too long, about 10-20 minutes after which thermodynamic

equilibrium is established. The measures of temperatures with the use of thermocouples and or other tools reveal a drop in temperature from +37°C at 1-2 cm depth to -160°C on the surface so it is difficult to estimate real temperature profile. That is why the mathematical simulation of the freezing zone is the best way to find the adequate zone of freezing. The experience of the doctor, and coordination of clinical results and mathematical simulations would establish optimal regimes of

ENDOBONCHIAL CRYOTHERAPY IN MONTREAL: FIRST RESULTS



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Montreal, Canada.

We began practising endobronchial cryotherapy in November 1997, since then we have performed 109 sessions in 43 patients. The vast majority of these patients had endobronchial tumours.

The results produced showed extreme variation from very good to very poor. Cryotherapy is often employed when other alternative techniques fail. In emergency cases, we combined cryotherapy with laser and electrocautery treatment.

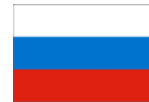
Cryotherapy was also utilised in 7 transplant patients with stenotic anastomosis. Unfortunately we were unsuccessful in re-opening the anastomosis; probably because the stenosis was already too fibrous.

Three patients had granuloma, in which cryotherapy produced excellent therapeutic results. The use of one or two treatments in these cases, was sufficient for the elimination of the granulation tissues.

We found using cryo alone had almost no complications. Cryo used in conjunction with electrocautery resulted in 1 in 6 patients suffering from perforation of the bronchial wall. Three of 6 patients who had received cryo before or after brachytherapy died due to haemoptysis (1 week to 7 months after the last treatment)

lesions were observed next to the cryoprobe, a low cryotoxicity and discrete lesions at the ice-ball periphery.

These conclusions cannot directly be applied to solid tumours in situ, as other factors play a part (histological structure, specific cryosensitivity and vasculature). The aim of the second experimental study was to improve the therapeutic efficacy of cryo on the low cryotoxicity regions. Fibrosarcoma was grafted onto the back of Sprague Dawley strain rats. Ten rats were treated with intra-peritoneal injection of Cisplatin alone, another ten rats had their tumour completely frozen and ten received a combination of the two treatments. The results were compared with the growth of the tumour on 6 control rats. Poor results were obtained for the separate treatments whereas the combined treatment significantly reduced tumour growth. We concluded that the association of cryo-chemotherapy could be a new regimen for the treatment of different carcinomas.



TREATMENT OF HEMANGIOMAS IN CHILDREN BY CRYO METHOD

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Cryosurgery can be used to treat simple angiomas in children. We developed a cryo-applicator using liquid nitrogen cryogen. The operation had a long duration of 50 minutes and consisted of stable freezing conditions. A series of experiments had been performed to determine the depth of freezing. The success of cryosurgery as a choice of treatment was clear when a 98.3% success rate was observed in a very large number of children with simple hemangioma.

In the treatment of cavernous hemangiomas in children, we used a combinational method. This was based on a previous experiment, which showed preliminary microwave irradiation of the area to be frozen, resulted in a four-six fold increase in

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were dark, bleeding and very painful. These patients were then treated medically. Four to six weeks later after, complete resolution of the thrombosis was observed, cryosurgery of the remaining lesion was carried out. Sixty-one patients were cured, the majority with one single treatment. Two other patients showed significant improvements, but were satisfied with the outcome and refused further treatment. Four lesions recurred; three were again treated with the same method and cured; the fourth, a voluminous recurrence, was treated surgically. Two patients had haemorrhage and one had moderate and transitional difficulty to urinate. Cryosurgery is comfortable, cost-effective and painless. It does not require hospitalisation, anaesthesia, an operating room or a catheterisation. Therefore cryosurgery is ideal for the treatment of urethral caruncle and prolapse.



EXPERIMENTAL STUDIES OF COMBINED CRYO-CHEMOTHERAPY

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Several factors contribute to cell death. Freezing begins in the extracellular compartments and micro vascular network, followed by intracellular crystallization. This results in the formation of necrotic slough. However, at the edge of the frozen area, the tissues may be frozen but not completely destroyed. This area of heterogenous destructive effect may be referred to as the "combined therapeutic area" as chemotherapy or radiotherapy will induce a synergistic or potentiating destructive effect. The literature on these subjects is very poor.

We report some clinical and experimental studies. The first experimental study on cell suspension of rat ascitic hepatoma and confirmed previous studies. Severe

Section 1

Abstracts



BREAST CANCER CRYOSURGERY IN CUTANEOUS METASTASIS POST MASTECTOMY

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We strongly recommend the employment of cryosurgery in the palliation advanced mammary cancer. This has been demonstrated in experimental studies, showing that in addition to destruction of neoplastic tissue, there is also the building of an 11 antigenic complex giving rise to a stronger immunological reaction. Frozen neoplastic cells give a more long lasting immunological response in patients treated with cryo rather than other surgical techniques. The same results were also observed in the treatment of melanoma metastasis. Since 1989, we have observed 22 patients affected with cutaneous relapse of mammary carcinoma, of which 17 are ductal carcinoma and 5 lobular carcinoma. All patients had multiple locations and all had previously been treated with chemotherapy, hormone therapy and radiotherapy. Patients received complete treatment; in each session, 3 to 7 locations were treated with 3 week intervals between each session. A total of 230 local relapses were treated, with the number of sessions per patient being 3 to 9. As a result all local relapses disappeared producing no second relapse in the cryo treated area. Although other locations appeared in close proximity, enlargement and ulceration of the area was avoided. We were unable to deal with deeper locations of neoplasm and poor results were seen for extended lesions with deep ulcers. Patients excepted cryosurgical treatment and showed no complications.

Although cryosurgical treatment did not alter prognosis, we were still able to slow down local progression of the disease avoiding ulcerations or adhesivity with ribs and improving the patients quality of life.

Section 1

Abstracts



METHOD OF EXTENSION OF THE VOLUME OF CRYOLESION ZONE

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So far experience gained from cryosurgery indicates that the limitations of cryo-destruction of sizeable pathological formations. Therefore it is necessary to alter the status of the tissue making them more sensitive to cryo-destruction.

Theoretical investigations suggest that tissue sensitivity to cold can be increased by exposure of tissue to microwave irradiation.

Experiments conducted on the liver of 98 rabbits demonstrated that microwaves of a particular range do not induce irreversible biological changes but promote significant increases of the necrotic zone. Studies have revealed that microwaves affect bound water which then becomes more mobile and sensitive to cold. Nuclear magnetic resonance imaging was used to evaluate the status of free and bound water under freezing, before and after microwave irradiation. Results indicated that heat conductivity significantly increased after microwave irradiation. A combination of microwave irradiation and cryogenic destruction is 30-40 times more effective than cryogenic destruction alone. This method has no surgical complications and a 95% success rate was achieved in children with angiomas.

Section 1

Abstracts



CRYOSURGERY OF URETHRAL CARUNCLE AND PROLAPSE

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Urethral caruncle and prolapse are extrusions of the urethral mucosa, frequently observed in post-menopausal women. The first is a sessile or pedunculated mucosal pedicle on the lower limit of the urethral meatus; the second is an all-round protrusion of the mucosa with a rose-like shape. Occasionally asymptomatic, they can cause pruritus, urination disturbances and slight haemorrhaging. They are rarely complicated with thrombosis, but then can become very painful. Conventional surgery is the choice of treatment for urethral caruncle and prolapse, but the procedure is very delicate, requiring hospitalisation, an operating theatre, local or general anaesthesia and catheterisation for a few days.

We have, on an out-patient basis, treated 63 women, of which 37 are suffering from caruncle and 26 from urethral prolapse all presenting mild symptoms. Cryosurgery is very simple and local anaesthesia is not necessary as this procedure is entirely painless. To treat the caruncle, we held it with a small forceps and applied a thin cryoprobe cooled by liquid nitrogen. The prolapse was treated by the application of the cryoprobe on its centre. In both cases, treatment is discontinued once the whole lesion including its base is frozen. A single freeze-thaw cycle is carried out with no temperature or impedance monitoring. On the subsequent days, a discreet haematic exudate or slight haemorrhage and oedema will occur, which will not affect urination. Fearing urethral stenosis, the caruncle and prolapse were partially frozen in 2 or more procedures, however no urethral stenosis was observed. At present we treat each patient with one application of cryosurgery, if this proves to be insufficient, we then carry out two or more procedures. Seven patients presented with thrombosis of the caruncle with lesions measuring between 1 and 2 cm, which