

Title

[Case of hepatocellular carcinoma with a marked reduction in the tumor size induced by PSK administration alone]

Author

Takada T; Ashie T; Kikuri K; Hosono A; Ogayu T; Matsuki T; Hanawa N; Shoji T; Iimura O

Source

Gan To Kagaku Ryoho, 1983 Jun, 10:6, 1530-5

Abstract

A 56-year-old man was admitted to our hospital because of right abdominal pain. The edge of the liver was felt 4.5 fingers breadth below the xiphoid process. AFP was 20100 ng/ml and CEA was 5.6 ng/ml. The chest X-ray indicated existence of lymphangitis and some nodular density suggesting lung metastasis in the both lower-lung fields. ^{99m}Tc-phytate liver scan showed a large defect along the antero-inferior margin of the right hepatic lobe, which revealed an abnormal uptake of ⁶⁷Ga-citrate. Ultrasonograms demonstrated a solid mass, 8 X 9 cm, in the right lobe of the liver. A CT-scan of the abdomen also showed a large, rounded, low attenuation mass with central necrosis in the right hepatic lobe: the pancreas and the remaining retroperitoneal structures appeared normal. **Following the administration of PSK alone, 3 g daily, for three months, a remarkable regression of both hepatomegaly and lung metastasis was observed.** Liver scan, ultrasonograms and CT-scan showed a striking resolution of the intrahepatic mass except central necrosis. AFP decreased to 33.7 ng/ml and CEA was 8.2 ng/ml. After about one year, however, ultrasonograms showed a newly growing solid mass, 3.5 X 3.5 cm, in the left lobe of the liver. A needle biopsy specimen was taken from the intrahepatic mass, and it was interpreted as hepatoma. He is now healthy.

Title

[Enhancing effect of irradiation on carcinoma of the uterine cervix by administering the protein-bound polysaccharide kureha (PSK)--quantitative nuclear DNA analysis following irradiation]

Author

Hayashi Y

Address

Department of Obstetrics and Gynecology, Okayama University Medical School.

Source

Nippon Sanka Fujinka Gakkai Zasshi, 1988 Feb, 40:2, 179-86

Abstract

The combined effect of PSK and radiation therapy has been studied in 34 patients with squamous cell carcinoma of the uterine cervix by noting the tumor cell kinetics change following irradiation. The DNA content of Pararosanillin-Feulgen stained tumor cells was measured by cytofluorometry to elucidate tumor cell kinetics. Twenty-one cases (PSK group) were administrated **3g. or 6g. of PSK daily** until at least 30Gy. Thirteen cases (control group) were treated with external cobalt-60 irradiation without PSK. In radiosensitive cases (n = 29; PSK group: 19, control group: 10), the PSK group had a smaller Over 4C Cell population in the DNA histogram after 14Gy than the control group, and the population at 20 Gy in the PSK group was significantly smaller (p less than 0.05). At 20Gy, the PSK group showed better histopathological response than the control group according to the Ooboshi-Shimosato classification, and the PSK group showed a smaller giant cell formation and more colliquative necrosis. These findings indicated that Over 4C cell (giant cell) formation due to endomitosis was decreased because of the increase in lethal damage to tumor cells following PSK administration with irradiation. In radioresistant cases (n = 5) also, there seemed to be an advantage.

Title

PSK immunotherapy in cancer patients--a preliminary report.

Author

Chung CH; Go P; Chang KH

Address

Department of Radiation Oncology, Mackay Memorial Hospital, Taipei, ROC.

Source

Chung Hua Min Kuo Wei Sheng Wu Chi Mien I Hsueh Tsa Chih, 1987 Aug, 20:3, 210-6

Abstract

A clinical trial was conducted by the Department of Radiation Oncology, Mackay Memorial Hospital, between 1981 and 1986, using PSK (Krestin) as an adjuvant immunotherapy to assess its potential benefit in cancer patients. **The protocol called for a daily administration of 1 gram tid of PSK orally for at least a month upon completion of primary treatment for the tumor.** A total of 67 patients were included in this study; 13 patients were excluded from evaluation because of noncompliance with the protocol. When three cases of toxicity were noted, PSK was discontinued for the three patients. Among the different groups of patients, nasopharyngeal carcinoma patients under PSK immunotherapy showed a significantly better survival when compared with historical controls (28% vs 17% five-year survival rate, p less than 0.05, generalized Wilcoxon test). **It is therefore concluded that PSK can serve as an important adjunct in the treatment of nasopharyngeal carcinoma.**

Title

[A case of inoperable advanced gastric cancer remarkably responding to combined chemotherapy with UFT-E, MMC and PSK]

Author

Kogure A; Ishii S; Kakefuda T; Aiura K; Arisawa Y; Kitagawa Y; Nakagawa M; Shirasugi N; Noga K

Address

Dept. of Surgery, Kawasaki City Hospital.

Source

Gan To Kagaku Ryoho, 1997 May, 24:7, 875-8

Abstract

A 55-year-old male consulted a local doctor with the complaint of epigastralgia. Examination of the upper gastrointestinal tract revealed **gastric cancer** (Borrmann Type II) and he was referred to our hospital for operation. A few lymph nodes were palpable in the left supraclavicular fossa, and the biopsy of those lymph nodes revealed metastatic adenocarcinoma. The CT scan of the abdomen showed enlargement of paraaortic lymph nodes. Then, the patient was determined inoperable (T3, N4, H02 P01, M1 stage IVb). He was treated as an outpatient with UFT-E (300 mg/day, orally), **Krestin (PSK 3.0 g/day, orally)** and Mitomycin C (MMC 6 or 8 mg once a week, intravenously repeated interval of 4 weeks). The total dose of UFT-E, PSK and MMC was 219 g, 1,095 g and 136 mg, respectively. **One month later, lymph nodes in the supraclavicular fossa disappeared, and the lesion in the stomach completely responded. We have followed the patient for more than one year. He visits our the outpatient department and has kept working until now.**

Title

Immunomodulation by orally administered protein-bound polysaccharide PSK in patients with gastrointestinal cancer.

Author

Nio Y; Tsubono M; Tseng CC; Morimoto H; Kawabata K; Masai Y; Shiraishi T; Imai S; Ohgaki K; Tobe T

Address

First Department of Surgery, Kyoto University Faculty of Medicine, Japan.

Source

Biotherapy, 1992, 4:2, 117-28

Abstract

The present study was designed to assess the effects of the protein-bound polysaccharide PSK on the immunological status of patients with gastrointestinal cancer. Twenty-nine gastric and 18 colorectal cancer patients were randomly assigned to either the control or PSK group. Patients in the **PSK group were given 3.0 g of PSK orally before surgery, either daily or every other day.** Patients in the control group received no PSK. The data of peripheral blood lymphocytes (PBL) were compared before and after administration of PSK, and those of the regional node

lymphocytes (RNL) were compared between the control and the PSK group. The results indicate that the effects of PSK were significantly influenced by the duration of administration, but not by the frequency of administration. In the patients belonging to the short term PSK group (administration less than 14 days), the response of the PBL to PSK and Con A become significantly stronger compared to before the administration of PSK, whereas the cytotoxicity against K562 and KATO-3, and the proportion of CD16+ cells increased significantly in those patients belonging to the long term PSK group (greater than or equal to 14 days). In addition, the proportion of CD9 + 11b + suppressor T cells decreased in the RNL of the short term PSK group, whereas the proportion of CD4 + Leu8 - helper T cells in the RNL increased in the long term PSK group. **These results suggest that the oral administration of PSK leads to the suppression of suppressor cells in the RNL.**(ABSTRACT TRUNCATED AT 250 WORDS)

Title

[Clinical results of a randomized controlled trial on the effect of adjuvant immunochemotherapy using Esquinon and Krestin in patients with curatively resected gastric cancer--7-year survival--Cooperative Study Group for Cancer Immunochemotherapy, Tokai Gastrointestinal Oncology Group]

Author

Ichihashi H; Kondo T; Nakazato H

Source

Gan To Kagaku Ryoho, 1987 Sep, 14:9, 2758-66

Abstract

A randomized controlled study was carried out on curatively resected gastric cancer patients in **a cooperative study involving 16 institutions** in order to evaluate the effect of an alternative long-term adjuvant immunochemotherapy using Esquinon (CQ) and Krestin (PSK). One week after surgery, CQ was given at a dose of 2mg/m² once a week for 3 weeks and this was repeated every 6 weeks. CQ was administered intravenously in the 1st course and thereafter orally up to 9 courses. Three postoperative week, immunochemotherapy was then started in which **PSK was given orally in 3 divided doses of 2g/m²/day** from the day when CQ therapy ended for 4 consecutive weeks, and this performed for every course. Estimated survival rate and cumulative survival curves were compared utilizing the data up to 7 years after surgery in the chemotherapy group given CQ alone and in the immunochemotherapy group given CQ + PSK. The survival curve in all cases showed a favorable form in the CQ + PSK group for up to 36 months, and thereafter it crossed with that of the CQ group for up to 68 months. Both curves twisted at 68 months and then deviated from each other, showing that the effect in the CQ + PSK group beneficial. The curve showed a twisting configuration throughout the treatment period. There was no statistically significant difference between the survival curves of the two groups. Retrospective survival analysis was then performed on separate subgroups classified into the category of S1, S2, N1, and N2. The CQ + PSK group was better than the CQ alone group in its survival rate for the S1 + S2 (N1-2) group, the percentage being 11.5%, **and a statistically significant difference was observed between the two groups** (p = 0.089).

Title

[The effect of immunochemotherapy with PSK in malignant tumors of the female reproductive organs]

Author

Fujiwara S; Suzumori K; Yasui Y; Yamamoto T; Yagami Y

Source

Gan No Rinsho, 1986 Jan, 32:1, 65-70

Abstract

In our series of investigations concerning immunopotentiators, we evaluated the host immunocompetence of patients triggered by PSK. Our subjects for screening consisted of seven patients with malignant tumors of female reproductive organs chosen at random from our patients. Four of them were treated with chemotherapy (CAPF) alone and served as controls, whereas the other three were administered **PSK, 3.0 g/day**, plus chemotherapy as above. Cellular and humoral immunities were measured at three points. Firstly prior to chemotherapy,

secondly, two weeks after the start of chemotherapy, and thirdly, prior to next chemotherapy. The results indicated higher values of T-cell subset ratio OKT-4/8 of 2.73 +/- 0.56 on the average for cellular immunocompetence as compared to 1.35 +/- 0.45 for normal subjects in the PSK-administered group, whereas there was no increase in the non-PSK-administered group, in which the value was 1.28 +/- 0.30. **Thus, PSK was considered to exert an immunopotentiating effect on the T-lymphocytes.**

Title

[A multi-institutional study on postoperative adjuvant immunochemotherapy of gastric cancer]

Author

Nakajima T; Inokuchi K; Hattori T; Inoue K; Taguchi T; Kondo T; Abe O; Kikuchi K; Tanabe T; Ogawa N

Source

Gan To Kagaku Ryoho, 1985 Sep, 12:9, 1850-63

Abstract

An analysis of 3,630 gastric cancer cases from 412 institutions who were treated with 6 randomly-assigned protocols was carried out to study the effect of daily PSK and Futraful administration and the **adjuvant effect of PSK** and/or Picibanil (OK 5 KE) combined with MMC and FT. Evaluation of immunochemotherapy was made on the basis of three-year survival rates and immunoparameters. **The most positive results were found in survival rates favoring the combined therapy (FT + PSK) over single administration (FT) to relatively early-stage patients (30%, difference), PSK, MMC and FT combination (10%), and PSK, OK, MMC and FT (22%), over single chemotherapy alone. Serum alpha-2 globulin levels, indicative of immunosuppression, were lower in PSK-administered cases.** The overall findings indicated that PSK and/or OK with MMC

Title

[A four-year follow-up study of hepatocellular carcinoma with bone metastasis]

Author

Matsuzaki T; Nakashima Y; Ikegami M; Okubo H; Hino K; Emura T; Shinkawa G; Hirai K; Abe H; Tanikawa K

Address

Dept. of Int. Med., Fukuoka Prefectural Hospital.

Source

Gan No Rinsho, 1989 Nov, 35:14, 1673-80

Abstract

A 68-year-old male was admitted to hospital for treatment of a hepatocellular carcinoma with a bone metastasis. By TAE and the administration of PSK, the tumor was necrotized and the AFP level returned to normal range. We presume that this combination therapy of TAE and **PSK was able to maintain normal cellular immunity and bring about this good result.**

Title

[The effects of PS-K on long-term survival of uterine cervical cancer patients treated with radiation]

Author

Okazaki A; Mitsunashi N; Yamakawa M; Nozaki M; Takeuchi M; Niibe H

Source

Gan No Rinsho, 1986 Feb, 32:2, 181-5

Abstract

The effects of PS-K on long-term survival of uterine cervical cancer patients treated with radiation was studied. The patients receiving PS-K were anxious about curability more or less at the time of completion of radiation therapy. Between 1977 and 1983, out of 96 patients with stage III, IV uterine cervical cancer treated with radiation, 27 were given PS-K as adjuvant therapy. The number of cases with PS-K administration were 15 (23%) out of 64 in stage IIIb, seven (37%) out of 19 in stage IVa and five (38%) out of 13 in stage IVb. Out of 27 patients administered PS-K, 19 were given the agent within three months after irradiation and the

remaining eight after recognition of recurrence or metastasis. As a rule, **PS-K was given orally, 3.0 g per day, intermittently in the pattern of two weeks per month.** Judgement of the effects of PS-K was made in comparison with the survival rate of the patients with and without PS-K, and then by observation of the changes of the PPD skin test, ESR, appetite and body weight as early effectiveness of PS-K. The results were as follows. **Obvious prolongation of survival was recognized in the patients with PS-K** after irradiation. Namely, the cumulative five-year survival rates of stage IIIb were 65% and 49% with and without PS-K, respectively. Improvement by PS-K as early effectiveness was obtained in seven cases (37%) out of 19. The conditions necessary for long-term survival with PS-K were thought to be as follows: that the tumor almost disappears as a result of irradiation and that the condition of the host is superior to that of the tumor in the tumor-host relationship. **The effectiveness of intermittent administration of PS-K was suggested.**

Title

[Effects of PS-K as adjuvant therapy for primary lung cancer--an autopsy case]

Author

Okazaki A; Niibe H; Mitsuhashi N; Ito J; Tatzawa T; Sakaino K; Baba T; Sakata N

Source

Gan No Rinsho, 1984 Oct, 30:13, 1707-12

Abstract

A 57-year-old woman underwent left lower lobectomy for primary lung cancer (papillary adenocarcinoma, T2NOMO). Despite postoperative adjuvant immunochemotherapy with 5-Fu, Carboquone and PS-K, bone metastases were recognized at 9 months after the surgery. **She received radiation therapy and was administered PS-K alone, 3.0 g daily.** As a result, long-term good condition was maintained with a positive PPD skin test. The bone metastases developed slowly, and the **patient survived 5 years and 8 months after the operation.** At autopsy, no obvious metastatic lesions were identified except for the bone metastases. **The cause of her death was thought to be acute renal failure** due to severe hemorrhage from an esophageal ulcer. Moreover, she was doomed because of advanced polycystic disease.

Title

[Evaluation of radiation immunochemotherapy in the treatment of malignant glioma. Combined use of ACNU, VCR and PS-K]

Author

Kaneko S; Abe H; Aida T; Tokuda K; Tsuru M; Kitaoka K; Sato M; Iwakuma T; Ueno K; Kashiwaba T

Source

Hokkaido Igaku Zasshi, 1983 Nov, 58:6, 622-30

Abstract

In a follow up study of 38 patients with supratentorial malignant glioma verified histologically during the 3 years from 1979 to 1982, the same therapeutic method which was the postoperative synchronized radiation-immunochemotherapy was applied. And we investigated the relationships between the survival rate and the histological malignancy, the operative area, and age of admission. Total dose of 5000 to 6000 rad radiation was given after surgery. 0.02 mg/kg of VCR was administered intravenously on the first and the 29th day of radiation, and 2 mg/kg of ACNU was administered intravenously 24 hours after VCR administration. After synchronized radiotherapy, 2 mg/kg of ACNU was given every 6 weeks **and 3 g of PS-K was given orally every day. Dose of PS-K was increased especially during the radiation and for 2 weeks after ACNU administration.** This radioimmunochemotherapy was applied to 38 patients with malignant glioma, 25 cases of glioblastoma multiforme, 12 cases of malignant astrocytoma, one cases of malignant ependymoma, one case of malignant oligodendroglioma. A complete clinical course of all patients was observed. 18 of 38 cases are surviving. The survival rate of malignant gliomas was 71.2% for one year, 47.6% for 2 years, 34.8% for 3 years. The survival rate of glioblastoma was 56.3% for one year, 36.9% for 2 years, 12.3% for 3 years. The survival rate of the patients receiving macroscopically total removal was higher than that of the patients receiving subtotal removal. The survival rate of the younger patients (under 49 years

old) was higher than that of the older patients (over 50 years old). Side effect of this therapy was myelosuppression in 75.8%.

Title

[Successful treatment with tegafur and PSK in a patient with gallbladder cancer]

Author

Komaki H; Onizuka Y; Mihara K; Seita M; Maeda M; Nakamura S

Address

Dept. of Internal Medicine, Miyazaki Prefectural Hospital.

Source

Gan To Kagaku Ryoho, 1988 Sep, 15:9, 2801-4

Abstract

A 56-year-old man was admitted to Miyazaki Prefectural Hospital with a complaint of pain in the right upper quadrant. The liver was moderately enlarged on palpation with tenderness in the upper abdomen. Ultrasonography and abdominal CT showed gallbladder tumor with multiple space-occupying lesions in the liver. In addition, serum levels of CEA and CA19-9 were markedly elevated. These findings suggested gallbladder cancer with liver metastasis, and he was soon started on tegafur rectally (1,000 mg/day) and **PSK orally (3.0 g/day). Two months later, the lesions in the liver almost disappeared**, although little change in size of the gallbladder tumor was noted. This condition lasted for 6 months indicating partial response. Subsequently, he died of liver failure 14 months after the start of treatment. **Since few antineoplastic agents have been reported to be effective against gallbladder cancer, tegafur and PSK might be a good combination for this disease.**

Title

[Two cases of unresectable pancreatic cancer responding to combined chemotherapy with cisplatin, PSK and UFT]

Author

Sohma M; Kitagawa T; Okano S; Utsumi M; Mutoh E; Takeda S; Kanda M; Suzuki Y; Okamura K; Namiki M

Source

Gan To Kagaku Ryoho, 1987 Jun, 14:6 Pt 1, 1926-9

Abstract

Two patients who had **unresectable pancreatic cancer** were treated with a combined chemotherapy using Cisplatin, PSK and UFT. **A remarkable decrease of tumor size was observed on CT.** These two cases corresponded to partial response (PR) according to the response criteria proposed by Koyama-Saitoh. No significant side effects were observed during this therapy. From the results in these two cases, this combination chemotherapy was considered to be one of the most effective antineoplastic therapies available for pancreatic cancer.

Title

[Clinical study of PSK as an adjuvant immunochemotherapeutic agent against gastric cancer]

Author

Mitomi T; Kyoji-Ogoshi

Source

Gan To Kagaku Ryoho, 1986 Aug, 13:8, 2532-7

Abstract

The effects of **PSK** in combination with Mitomycin C, Adriamycin and Tegafur were studied in **168 patients** who underwent gastrectomy for **gastric cancer**. **The study group receiving PSK showed improved survival and there was a significant difference in the estimated survival.** An improved survival rate was also shown at stages III and IV, in the group given an FAM regimen and in the group with well differentiated adenocarcinoma.

Title

[Evaluation of immunochemotherapy in patients with primary liver cancer. Osaka Research

Society for Liver, Gallbladder and Pancreas]

Author

Kojima J; Kamata T; Monna T

Source

Gan To Kagaku Ryoho, 1987 Jan, 14:1, 179-87

Abstract

The effectiveness of BRM (biological response modifier) for primary liver cancer was investigated in a prospective randomized and well controlled study. The protocol consisted of 3 groups: 1) Tegafur oral administration only, 2) OK-432 i.v. plus Tegafur, and 3) PSK oral application plus Tegafur. One hundred seventy-two Japanese patients were entered. The results revealed that BRM addition was more effective than Tegafur therapy alone with regard to tumor regression and the results of clinical examinations, but that there was no difference in subjective symptoms between the use of BRM and the other regimes. As to prognosis, **patients given PSK survived longer than those given Tegafur alone**, but OK-432 group had the same survival rate as the other two groups as a whole. The relationship among the three groups with regard to survival time, was similar to that of their respective total efficacies. Between the three groups, there was a significant difference in the incidence of adverse effects. The difference was sustained with the occurrence of fever symptoms as a result of OK-432 stimulation, with and BRM therapy decreased the gastro-intestinal side effects in comparison with the control group.

Title

Effect of krestin (PSK) as adjuvant treatment on the prognosis after radical radiotherapy in patients with non-small cell lung cancer.

Author

Hayakawa K; Mitsuhashi N; Saito Y; Takahashi M; Katano S; Shiojima K; Furuta M; Niibe H

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Department of Radiology and Radiation Oncology, Gunma University School of Medicine, Japan.

Source

Anticancer Res, 1993 Sep-Oct, 13:5C, 1815-20

Abstract

From 1976 to 1985, **185 patients with non-small cell lung cancer** at stages I-III were treated with definitive radiotherapy in Gunma University Hospital. As a result of analyzing the long-term survivors treated with radiotherapy, suitable conditions of the patients for radical radiotherapy were as follows; 1) stage I or II, and some stage III, 2) as regards the histologic type epidermoid carcinoma or well-differentiated adenocarcinoma, 3) as regards the primary sites, the upper lobe and the superior segment of the lower lobe, 4) the optimum dose was 60-70Gy, 5) the size of the radiation fields given > 40Gy was 100 cm² or less, and 6) the host condition was satisfactory (BRM combined use). In particular, **as a result of administering PSK as adjuvant treatment to patients with epidermoid carcinoma of the lung showing satisfactory tumour shrinkage** after radiotherapy, the **five year survival rate** of the patients with stages I or II disease, as well as **stage III was 39% and 22% respectively, compared with the non-administered group's 16% and 5%. These differences are statistically significant.** Although an improvement in the results of treatment with the combined use of appropriate BRMs is anticipated in the future, when clinical trials for combined BRM and radiotherapy are planned, the subjects should be patients with satisfactory tumour regression after radiotherapy.

Title

[Evaluation of immunotherapy with PSK in esophageal cancer]

Author

Ogoshi K

Source

Gan To Kagaku Ryoho, 1988 Nov, 15:11, 3143-51

Abstract

The cooperative study group of PSK for resected **squamous cell carcinoma** of esophagus was

formed among **18 institutes in Japan to evaluate the efficacy of PSK**. From February 1983 to November 1985, a total of 187 patients were entered into this study. Some 140 of them were judged to have received complete therapy. **PSK was used as an immunopotentiator** in combination with radiotherapy (I-A, I-B) and radiochemotherapy (II-C, II-D). The selection of radiotherapy or radiochemotherapy was entrusted to each institute. The two-year survival rates of I-A, I-B, II-C and II-D were 59.7%, 54.5%, 40.1% and 54.1%, respectively. From these observations, **PSK was considered beneficial for esophageal cancer** in combination with radiochemotherapy.

Title

Effect of Krestin as adjuvant treatment following radical radiotherapy in non-small cell lung cancer patients.

Author

Hayakawa K; Mitsuhashi N; Saito Y; Nakayama Y; Furuta M; Nakamoto S; Kawashima M; Niibe H

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Department of Radiology and Radiation Oncology, Gunma University School of Medicine, Japan.

Source

Cancer Detect Prev, 1997, 21:1, 71-7

Abstract

To evaluate the **efficacy of Krestin (PSK)** as adjuvant treatment after radical radiation therapy (RT) for **non-small cell lung cancer (NSCLC)**, treatment results of **225 patients** with NSCLC treated with RT followed by adjuvant administration of PSK between 1976 and 1989 were analyzed. Of these patients, 170 (76%) had squamous cell carcinoma. In the patients with squamous cell carcinoma of the lung, PSK was given only when the tumor showed satisfactory shrinkage (complete or partial response) after completion of RT. The treatment outcomes were compared with those of the responders to RT not receiving PSK. **The 5-year survival rates of patients with stages I-II and stage III disease were 39 and 26%, respectively, while the non-administered responder group's were 17 and 8%. These differences are statistically significant.** An improvement in the treatment results with combined use of appropriate immuno-modulating drugs is anticipated in the future. When clinical trials of the efficacy of these drugs are conducted, the agents should be given to the patients with satisfactory tumor regression after RT, although they still take much time and cost.

Title

Oral administration of PSK can improve the impaired anti-tumor CD4+ T-cell response in gut-associated lymphoid tissue (GALT) of specific-pathogen-free mice.

Author

Harada M; Matsunaga K; Oguchi Y; Iijima H; Tamada K; Abe K; Takenoyama M; Ito O; Kimura G; Nomoto K

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Source

Int J Cancer, 1997 Jan 27, 70:3, 362-72

Abstract

We investigated both the effect and the mechanism of **oral (p.o.) administration of PSK, a protein-bound polysaccharide** derived from Basidiomycetes, on the anti-tumor T-cell response in gut-associated lymphoid tissue (GALT). The p.o. administration of PSK significantly suppressed the growth of colon 26 carcinoma (C-26) inoculated into the subserosal space of the cecum (i.c.), and augmented the tumor-neutralizing activity of the draining mesenteric lymph node (LN) cells. PSK treatment also significantly decreased the levels of immunosuppressive factors such as plasma transforming growth factor (TGF)-beta in the i.c. C-26-inoculated mice. We also evaluated the improving effect of PSK on the anti-tumor T-cell response in GALT by utilizing B7-transfected P815 mastocytoma (B7/P815). The PSK treatment promoted the rejection of i.c.-inoculated B7/P815 and restored the CD4+ T-cell-dependent proliferative response of the

draining mesenteric LN cells against in vitro restimulation. Furthermore, the treatment also decreased the TGF-beta production but increased the IFN-gamma production of these cells. The p.o. administration of PSK, however, showed no effect in the CD8+ T-cell-dependent cytolytic activity of the draining mesenteric LN cells after in vitro restimulation. Overall, **these results indicate that the p.o. administration of PSK can improve the impaired anti-tumor CD4+ T-cell response in GALT, mainly through a suppression of TGF-beta production and a restoration of IFN-gamma production.**

Title

[Effect of PSK on cell-mediated immune status in the patients of stomach cancer]

Author

Ogoshi K; Kondoh Y; Tajima T; Mitomi T

Source

Gan To Kagaku Ryoho, 1983 Mar, 10:3, 811-7

Abstract

Among **56 patients with stomach cancer preoperative cell-mediated immunity** in relation to clinical staging was studied: eight cases were subjected to a control study in order to evaluate effects of PSK on cell-mediated immune status, preoperatively and postoperatively at 1, 3, 6, 9 and 12 months. They were given MMC and FT-207, and 4 of them (the study group) received PSK in addition. Preoperative study showed that WBC count, peripheral lymphocyte and T-lymphocyte tended to show a decrease as the disease progressed, whereas there was no major change in PHA response of lymphocytes. Postoperative study on 4 control patients showed that peripheral lymphocyte and T lymphocyte decreased, and that IgG X FcR+ T cells significantly increased during postoperative period. Four patients in the study group who received PSK, however, did not show these characteristics. **It thus appears that PSK is effective in activating cell, while immunity during postoperative period, possibly by counterworking suppressor cells including IgG X FcR+T cells.**

Title

[Nonspecific cell-mediated immunity in gastric cancer patients - with special reference to immuno-reactivity of the regional lymph node and preoperative immunotherapy]

Author

Takeshita M

Source

Nippon Geka Gakkai Zasshi, 1983 Aug, 84:8, 679-91

Abstract

Cell-mediated systemic immunity and immuno-reactivity of the regional lymph node in patients with gastric cancer were investigated. The studies were undertaken on the parameters such as skin test (PHA, PPD, Candida and SK-SD), T-cell subpopulation and lymphocyte blast formation. And concerning the regional lymph node, percentage of T-cell and blast formation were examined. The following results were obtained. There were correlations between the nonspecific parameters (PHA skin test, count of active T-cell and PHA blast formation) and the staging according to the Japanese Research Society for Gastric Cancer. There were also correlations between the stage and the percentage of T-cell, PHA blast formation with and without autoserum in the immunity of the proximal regional lymph node. Correlations between the PHA blast formation in the proximal lymph node and the nonspecific parameters such as PHA, Candida skin test, count of the active T-cell and PHA blast formation in the peripheral lymphocyte were observed. The immunity of the distant regional lymph node was impaired in the patients of stage IV and III with 4 metastatic lymph nodes or more. Preoperative administration of PSK prevented impairment of cell-mediated immunity after operation. **Patients administrated lentinan before operation got rid of depression of immunity in the proximal regional lymph node.**

Title

Effect of PSK and its subfractions on peripheral blood lymphocytes mediated cytotoxicity against urinary bladder tumor cells.

Author

Mizutani Y; Nio Y; Yoshida O

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Department of Urology, Faculty of Medicine, Kyoto University, Japan.

Source

J Urol, 1992 Nov, 148:5, 1571-6

Abstract

Our previous studies have indicated that the **protein-bound polysaccharide Kreha (PSK) enhances the cytotoxic activity of peripheral blood lymphocytes (PBL) against the T24 human urinary bladder tumor cell line in patients with bladder tumor**. Since PSK consists of a mixture of various kinds of protein-bound polysaccharides, the present study was designed to examine which subfractions of PSK mediated the enhancement of cytotoxicity. When PSK was separated according to size, treatment of PBL with the 50 kilodalton (kd) or less fraction killed T24 cells more efficiently than unfractionated PSK-treated PBL. The higher molecular weight fractions did not enhance killing above the control level. PSK was fractionated on a diethylaminoethyl (DEAE)-cellulose column to obtain a protein rich fraction that adsorbed onto the column and a polysaccharide rich fraction that did not. PBL treated with the polysaccharide rich fraction were able to kill T24 cells more effectively than unfractionated PSK-treated PBL. The protein rich fraction had no effect on the killing. Further fractionation of the polysaccharide rich fraction was performed by differential precipitation with ammonium sulfate. PBL treated with the precipitated fraction at 70-80% saturation (PSK Fraction D) enhanced cytotoxicity equal to that of the polysaccharide rich fraction. Treatment of PBL with the other fractions did not augment the cytotoxicity. These enhancements by PSK fractions were observed in healthy donors and also in patients with bladder tumor. An increase of the proliferative response of PBL to PSK Fraction D as well as unfractionated PSK was observed. Treatment of PBL with PSK Fraction D had no effect on the proportion of PBL binding to T24 cells, thus suggesting a post-binding effect. The structure of PSK Fraction D as inferred from the results of methylation analysis was mainly an alpha-glucan. These results demonstrate that PSK mediated enhancement of cytotoxicity and proliferation of PBL may be largely due to an alpha-glucan of less than 50 kd.

Title

Immunochemotherapies versus chemotherapy as adjuvant treatment after curative resection of operable breast cancer.

Author

Iino Y; Yokoe T; Maemura M; Horiguchi J; Takei H; Ohwada S; Morishita Y

Address

Second Department of Surgery, Gunma University School of Medicine, Japan.

Source

Anticancer Res, 1995 Nov-Dec, 15:6B, 2907-11

Abstract

In our previous study, oral adjuvant combination chemotherapy of 5-fluorouracil, cyclophosphamide, mitomycin C, and prednisolone (FEMP) after curative resection of operable **breast cancer** with vascular invasion in the tumor and/or in the metastatic lymph node was found to be more effective than one course of mitomycin C or cyclic course of mitomycin C. In the present study, we have assessed the **efficacy of protein-bound polysaccharide (PSK) or levamisole (LMS)** in addition to FEMP. Between January 1980 and December 1990, 227 operable breast cancer patients with vascular invasion in the tumor and/or in the metastatic lymph node were randomized into FEMP, FEMP + LMS, or FEMP + PSK. The risk ratio was lower in the FEMP + PSK group compared to the FEMP group. In disease-free survival or overall survival, there was no significant difference between the three groups, however, the survival curve of the FEMP + PSK group tended to be better than that of the FEMP group (logrank, $P = 0.0706$; generalized Wilcoxon, $P = 0.0739$). Side effects were observed at a low incidence, but they were mild and tolerable. **Immunochemotherapy using PSK improved the prognosis of patients with operable breast cancer with vascular invasion.**

Title

Adjuvant therapy of gastric cancer: the Japanese experience.

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Source

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Abstract

The **5-year survival rate of patients with advanced gastric cancer** who undergo curative resection is gradually increasing and currently ranges between 67.1% to 76.4% at the five major cancer centers in Japan. A belief that minimal residual disease has a high probability of being cured with adjuvant therapy prompted Japanese investigators to develop the D2 dissection with extended lymphadenectomy, more detailed pathologic staging, perioperative chemotherapy, and chemoimmunotherapy. This review focuses on comparative trials performed in Japan studying the use of adjuvant therapy with either chemotherapy alone or chemotherapy plus immunotherapy in the treatment of patients with curatively resected gastric carcinoma. Preoperative and intraperitoneal therapy also has been evaluated. **At present, however, no chemotherapy has been shown to impact favorably on the survival of gastric cancer patients, whereas the biological response modifiers, PSK or OK-432, seem to add some benefit to chemotherapy in the adjuvant setting.** Carefully designed randomized controlled trials with sufficient size which include a surgery-alone control arm are the only way to establish the efficacy of adjuvant therapy.