(2) 疫学部会

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植田貞三	福岡市衛生部長
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緒方盛雄	大牟田市衛生部長

(3) 分析専門部会

部会長　九州大学工学部長　塚元久雄

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倉恒匡徳	九大医公衆衛生学教授
牧角三郎	〃 法医学教授
稲神　馨	九大農食品製造工学教授
山田芳雄	〃 食品業養肥料学助教授
竹下健次郎	九大生産研究所構造化学教授
上野景平	九大工合成化学教授
山口誠哉	久留米大学公衆衛生学教授
真子憲治	福岡県衛生研究所長
山本茂徳	北九州市衛生研究所長
永井諄爾	九大医中央検査部長
菅野道広	九大農業養化学助教授
吉賀　修	九大農畜産学助教授

ールと同様のパターンが見られた．かくて，ライスオイルを汚染している物質と，中毒患者の生体内に存在する物質とが全く同じであることが証明され，本症がカネクロールの中毒によつて起つたことが確認されたのである．このことは11月9日分析専門部会長から発表した．

この間10月19日に研究班が拡大再構成されて本症の原因究明に至るまで，約3週間であつた．臨床部会では本症患者で，妊娠者に皮膚着色を示す早死産児があり，本症との関係を重視し調査をすすめている．また胎児の皮膚からカネクロール様成分を証明した．

なお油症班とは別に，ライスオイルの脱臭工程における加熱媒体としてカネクロールが使用されている事実から，九大工学部機械工学の媒原教授の調査班一行によつて，カネミ倉庫の機械の点検が行なわれ，脱臭工程におけるパイプからのカネクロール洩れの事実が見出され，油へのカネクロール汚染がこの脱臭過程にあるのではないかと考えられるに至つた．

以上油症研究班のデーターは昭和43年11月20日現在で一応とりまとめ，中間報告として当局並びに一般に公表した．しかしその後の観察，実験なども進展して来たので昭和44年2月末日現在の成績をここに報告するものである．

なお本研究班においては本症を「いわゆる油症」"Yusho" と呼び，カネクロールの成分が塩化ビフェニール（塩化ジフェニールともいう）であるから，英文では Chlorobiphenyls Poisoning と呼称することを決めた．

以上，今日まで得られた成績の要点は次のごとくである．

1) 原因不明の塩素痤瘡様発疹を主徴とする患者が昭和43年6月頃から福岡県を中心に発症したので，その原因究明のため九大医学部を中心に油症研究班が組織された．

2) 油症班疫学部会の研究により，本症はカネミ製のライスオイルを食用として摂取している者に発症し，しからざるものからの発症は見られないことがわかつた．また発症者は昭和43年2月上旬出荷のものを摂取した者に集中していたことが明らかにされた．

3) 本症患者が使用していたカネミ製ライスオイルから多量の有機塩素混合剤であるカネクロールが証明され，対照の油からは証明されなかつた．農薬，重金属類は見出されなかつた．

4) 本症患者の分泌物，皮下脂肪等からカネクロールが証明された．対照例では陰性であつた．

5) 以上の事実から本症はカネミ製のライスオイルがカネクロールによつて汚染されたためにおこつた有機塩素中毒症と考えられた．

6) 本症の臨床症状，その診断，病態生理，病理，治療法ならびに動物実験などについて，今日まで得られた成績をここに集めた．

本研究に当つては，厚生省の援助により科学技術庁の調査研究費が与えられたことを附記して謝意を表する．また本報告書作成については福岡県知事より援助を受けた．

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Foreword

Shibanosuke Katsuki, M. D.

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This special issue of Fukuoka Acta Medica is devoted to the study on "chlorobiphenyls poisoning" occured recently in Northern Kyushu and consisting of papers by the members of the Study Group observed from October of 1968 to February of 1969.

This disease is proved to be the first outbreak of chlorobiphenyls poisoning in general population.

One day in early June of 1968, 3 year-old girl suffered from acne-like skin eruption visited our hospital. Meanwhile, her parents and elder sister developed the same type of skin eruptions. The number of the same disease increased steadily and were found to be widely distributed through Northern Kyushu particularly in Fukuoka prefecture. The staffs of Dermatology in our hospital noticed chloracne-like eruption and suspected some poisoning of rice oil, since the occurence was found to be clearly limited to the family unit in which the same brand of rice oil was used. However, close examination failed to discover the cause of intoxication at that time.

On October 19, 1968, the Study Group for YUSHO (Rice Oil Disease) was organized, consisting of clinical, survey and chemical analysis members from Faculty of Medicine, Pharmaceutical Science and Technology in Kyushu University. Suspected oil samples were collected, registered and kept under supervision of the Department of Legal Medicine and served for chemical analysis and animal experiment. Diagnostic criteria and treatment guide for so-called YUSHO were published and distributed. Medical examination and field survey were performed by the staffs of the Group in close cooperation with the personnel of the public health centers.

The findings obtained by the end of February of 1969 can be summarized as follows :

1. Occurence of this disease was restricted to the family unit in which the rice oil of KANEMI brand produced early February of 1968 was used.
2. KANECHLOR, chlorinated diphenyls or chlorobiphenyls, used in manufacturing process was detected in the KANEMI rice oil used by these patients.
3. Components of KANECHLOR were also detected in secretions and subcutaneous fat tissues biopsied from the patients.
4. Thus, it was found that the disease was due to chlorobiphenyls poisoning induced by digestion of the rice oil which was contaminated by KANECHLOR during the manufactural process.

Reports concerning with clinical pictures, diagnosis, pathophysiology, pathology, treatments for this poisoning and studies on animal experiments are also included in this issue.

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油症（塩化ビフェニール中毒症）の皮膚科学的症候論

九州大学医学部皮膚科学教室（主任 樋口謙太郎教授）
五島 順安・樋口 謙太郎

The Symptomatology of Yusho (Chlorobiphenyls Poisoning) in Dermatology

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Thirteen patients of four families have visited as outpatients the Department of Dermatology of Kyushu University Hospital from June to October in 1968, mainly complaining of acneform eruption. This created a suspicion of Chloracne through clinical findings, yet there remained problems from the standpoint of familial outbreaks and different life-environment.

Therefore, we thought its cause might be rice oil extracted from of rice-bran, considering common foodstuffs. As an analytical result, Kanechlor 400 of which main content was tetra-chlorobiphenyl was pointed out, and the case has been called Yusho (Chlorobiphenyls poisoning).

The purpose of this report is to elucidate the symptomatology of this disease through clinical and laboratory examination of 138 patients who have visited Kyushu Univeristy Hospital as outpatients. About 200 ppm of Kanechlor 400 was contained in oil taken by the patients. The amount taken by patient's family (4 persons on average) was 1.8*l* within a month. In Jod-tit method, Peroxide value of this oil was from 27.2 meq/kg, in contrast with 3.1 to 5.7 meq/kg of general foodstuffs. And this oil contained 37% of C-18. 2.

1) The state of outbreaks of patients

The number of patients: 138 (male 72, female 66)

Age: under ten—34 cases, in thirties—29 cases, in twenties—27 cases, in teens—20 cases, over 40 years of age—rare.

The relation between age and sex: under ten—boy 22 cases, girl 12 cases, adults—no difference between man and woman.

2) The time of outbreaks

The time of taking oil was estimated to be from the end of February to the beginning of March 1968. The time of outbreaks was March in 8 cases, April in 13 cases, May in 20 cases, June in 32 cases, July in 18 cases, August in 28 cases, September in 10 cases, October in 2 cases and December in 5 cases. The greater part of 28 cases in August were children under ten, which made us think that the outbreak was between May and August centering in June.

3) The state of incipient stage

There were 52 cases of the increased discharge from eye, the swelling of eyelids, and the weakness of eyesight, 45 cases of acneform eruption and the enlargement of follicular openning, 13 cases of pigmentary deposite of nails, gingiva and lips, 9 cases of the swelling of the limbs and 4 cases of nausea and vomiting.

The symtoms appeared earliest in eyes, later after 2 or 3 months in skin. The general poisonings such as fatigue, nausea and vomiting could be seen early.

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4) Clinical signs

There were many patients who complained of the swelling of upper eyelids, anorexia, languishment, the feeling of numbness, the edematous swelling of limbs, nausea, vomiting, lumbago, the pain of joint, heel pains, the pigmentation of lips, abnormal menstruation, and impotence. There could be seen various kinds of skin disease, which was represented by Chloracne, associated with follicular keratosis.

a) Ophthalmic findings: Uneveness in the line of eyelids, swell of Meibom gland, pigmentation of cornea-ring and conjunctiva, hyper-secretion of cheese-like discharge from the eye.

b) Dermatological findings: Acneform eruption, marked enlargement and elevation of follicular openning, pigmentation and flattening of nails, pigmentation of skin, lips, gingiva and mucous membrane of oral cavity, formation of hyperkeratotic plaque in sole and palm, hyperidrosis, hypertrichosis, swell of Montgomery gland in the breast, cyst formation of sebaceous gland in the genital region; in the case of children, dry skin, milia in the site of joint.

The change of the skin seemed to be based on the hyperkeratinization associated with abnormal lipid metabolism. Individual lesions of acne-form eruption were from the size of pin head to that of pea. They were pale, straw-colored cysts and showed the formation of huge cyst filled with keratinous material and very small sebaceous material. The evidence of hair follicle was owing to an enlargement of follicular openning and a filling of keratinous material. There was seen a considerable secondary infection of staphilococcus epidermidis. These formed large abscesses and the lesion such as infectious atheroma. There were some cases which had hemispheric tumor in joints.

5) Grading according to severity

Grade I: increased cheese-like discharge from Meibom gland, pigmentation of nails. Grade II: grade I plus comedon. Grade III: grade II plus acneform eruption, cyst formation of sebaceous gland in genital and evidence of follicular opening in the site of neck and upper chest. Grade IV: enlarged and elevated follicular opening on all over the body and extending distribution of acneform eruption.

The grade of children was usually slight; that of grown-ups between adolescence and 40 was serious.

6) Laboratory examination showed the increased serum alkaline phosphatase, the rise of SGOT and SGPT value in severe cases. The increase of serum triglyceride was observed in general. Serum cholesterol was low in the case of serious illness. According to an analysis of serum protein, there were the rise of albumin and α_2-globulin and the fall of γ-globulin. These findings seem to be characteristic in Yusho, comparing with those of occupational acne which show normal alkaline phosphatase, GOT and GPT value in serum and increased serum cholesterol, total lipid and normal analitical percentage of serum protein.

7) In chemical analysis of the material from the patients, Kanechlor 400 was detected in sebum and subcutaneous fat in level of 13.1 to 75.5 ppm.

I 緒言

1968年6月以降，10月10日までに九州大学医学部皮膚科外来を座敷様皮膚を主訴とする4家族の患者13名が訪れた．これらは臨床所見から塩素座敷を疑わせたが，家族発生であること，生活環境がことなることなどに問題があつた．共通の食品から，カネミライスオイルが原因とみなされ，分析の結果，油の脱臭工程で使用されるカネクロール（塩化ビフェニール）の混入が指摘されて，ここに臨床症状とあわせて油症（塩化ビフェニール中毒症）の命名がなされた．

患者の発生は福岡県を中心に，西日本一帯にひろがり，相当数に達している．患者発生数は福岡県内において325名（1968年1月20日），九州大学附属病院外

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