

RESEARCH ON THE CAUSE OF KASCHIN-BECK DISEASE

杨建伯 著

大骨节病 病因研究

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序 言

作者自 1965 年秋受命研究大骨节病病因与防治对策,迄今 33 年。先后发表论文 140 篇,本书收录其中的 92 篇。全书分为 10 个部分,即:①现场流行病学观察(11 篇);②大骨节病的诊断与病区类型的划分(6 篇);③大骨节病儿童体液生化类型与亚临床病例研究(14 篇);④致病物质的检出、分离(16 篇);⑤镰刀菌产毒条件研究(8 篇);⑥镰刀菌毒素(T-2 毒素)致大骨节病实验病理研究(8 篇);⑦阻断病因试验和防治措施研究(9 篇);⑧病因研究的总结与阶段总结(8 篇);⑨全国大骨节病病情监测(8 篇);⑩关于方法论的考虑(4 篇)。10 个部分其实是一个目的,一切为了揭示大骨节病的原因。

这些文章代表着作者 30 余年研究经历,其中有前进的,有彷徨的,也有退步的时候,“却顾来时径,苍苍横翠微”,对于一个探索者,这是正常的。大骨节病病因问题困扰世界医学达 150 年之久,有其充分的理由。这是一个非常困难的课题。许多研究者曾经为之付出过心血,做出过贡献,然而始终未能叩开病因奥秘之门。原因很多,而最根本的是时机尚未成熟。时候不到,是难以逾越的障碍。本书的前前后后,用事实的堆垒证明作者有幸克服了障碍,取得了成功。问题的解决,正是时机的成熟。按作者的理解,时机的成熟,意味着近年来相关基础科学取得了决定性的进步。主要是:①流行病学调查分析方法的迅速进步(1950~);②T-2 毒素的发现与化学结构的确认(1968 年);③食品中 T-2 毒素检验方法的进步,特别是 ELISA 检验方法的提出与发展、成熟(1987 年);④骨关节病实验病理研究中关于 Osteochondrosis (OC)、Osteoarthritis(OA),特别是关于 OC-OA 转化机制研究的进步(1980~)。正是这些进步对作者的病因研究给予了巨大的支持和推动,否则一切都不可想象。所以,大骨节病病因问题得以在 90 年代的中期取得突破,应当说是顺理成章、“此其时也”的事情。作者在深思之余,由衷慨叹的是,这就是历史!

作者在 30 年的大骨节病病因研究中,曾经直接、间接与许多同志合作过,总数在百人以上。发表论文,由作者牵头担任第一作者的有百余篇,由其他同志牵头,作者列为参加者的还有许多。本书容纳作者牵头并任第一作者的 88 篇,第二、三作者的 12 篇,有一篇是作者早年一位硕士研究生的文章,因为内容上联系密切,作为特例,收了进来。文章署名方式与顺序保留发表刊物上的原状,没有更动。但有两点要做补充说明:①作者在文革期间撰写的论文,刊出时按当时习惯作法均未署个人名字,这一次改正过来,在每篇末尾缀上“杨建伯撰稿”字样,然而仅限于作者牵头并任第一作者的文章。②少数大协作的工作,只录取其中由作者牵头并任第一作者的文章,署名按前项方式处理。作

者以为这样做符合历史和现在的实际情况。

本书的出版,受到哈尔滨医科大学校长金连弘教授、哈尔滨医科大学中国地方病防治研究中心主任李忠之主任医师、黑龙江省地方病防治办公室主任徐洪昌大夫和哈尔滨医科大学中国地方病防治研究中心大骨节病研究所副所长孙殿军教授以及唐小波副研究员等的大力支持、协助,作者由衷地感谢。同时,借此机会也向所有共同工作过的同志们表示衷心的感谢。

杨建伯于哈尔滨医科大学
1998年5月5日

PREFACE

Thirty years had pasted since the autumn of 1965, when the author received instructions to study the cause and preventive strategy of Kaschin-Beck Disease(KBD). Up to now 140 papers are published, in which 92 of them are selected in this book. The book is divided into 10 parts; 1. On-the-spot epidemiologic survey(11 papers), 2. Diagnosis of KBD and type of the diseased areas(6 papers), 3. Studying on body fluid biochemical type in the children suffering from Kaschin-Beck disease and the subclinic cases (14 papers), 4. Detection and isolation of KBD causing agents (16 papers), 5. Toxin Producing conditions of Fusarium(8 papers), 6. Experimental pathology of KBD caused by Fusarium toxin(T-2 toxin)(8 papers), 7. Study on the experimental block of causal chain and preventive methods (9 papers), 8. Summary of the etiology and periods summary (8 papers), 9. National KBD state surveillance (8 papers), 10. About the methodology (4 papers). Ten parts one aim, that is to discover the cause of KBD.

The papers represent the author more than thirty years research experience. In the course of studies, there are much of advances, hesitations, or even go some backward, from time to time and it is natural to have discovery after so many years of hard working and tortuous struggle. This is normal to an explorer. It is understandable that the cause of KBD puzzled medical scientists for over 150 years. It is a very difficult subject. Many researchers spent all their energies, but still did not solve the problem. The reasons are numerous, basically the times is not come. Times is an insurmountable barrier. In this book, the author proved that he solved the problem based on many facts. It is times that the problem was solved, that the author thinks that the related basic sciences achieved critical progress in recent years is the mature of times. The progresses are; 1. Rapid progress of epidemiologic survey methods(1950 ~); 2. Discovery of T-2 toxin and it's structure(1968); 3. Progress of T-2 assay in foodstuff, especially ELISA method's development and completion (1987); 4. Progress of research on experimental pathology of Osteochondrosis(OC) and Osteoarthritis(OA), especially conversion mechanism of OC into OA(1980 ~). They are the progresses that give the author giant support and push, otherwise the success is impossible. So, it is logical that the research achieved breakthrough in the middle of the 90's of the 20th century. After pondering, the author sighes with feeling, this is history!

The author cooperated directly and indirectly with more than 100 researchers over the 30 years in KBD research. Published papers as a first author are over 100, and the papers as a coauthor many. In this book, 88 papers of them as a first author are collected, 12 papers as a second or third author, and one paper is from one of the author's early postgraduate student. Because the student's paper has a good relationship with KBD research, it is collected as a special case. The signed orders

of authors of all the papers are kept the same as the original journals. But there are two additional remarks; 1. Author names were not put on papers written during the culture revolution according to the rules of that times. In this book, the author put "written by Jianbo Yang" at the end of such papers, which limited to those the author directed the research. 2. Papers as a first author in "Big cooperation times" are selected in the book, and signed name of the authors is treated same as in former term (i. e. remark 1). The author thinks this is practical based on history and present situation.

The author thanks President Lianhong Jin of Harbin Medical University; Director Zhongzhi Li of Chinese Endemic Disease Research Center in Harbin Medical University; Doctor Hongcang Xu of Heilongjiang Provincial Endemic Disease Office; Professor Dianjun Sun and associate professor Tang Xiaobo of Kaschin-Beck Disease Institute in Harbin Medical University for their help and assistance.

Yang Jianbo
in Harbin
on May 5, 1998

目 录

(黑体表示重点文章)

第一部分 现场流行病学观察	(1)
大骨节病流行病学调查综合报告之一(1966)	
——试论大骨节病致病因子的“传播途径”的问题.....	(3)
大骨节病流行病学调查综合报告之二(1970)	
——再论大骨节病致病因子的“传播途径”问题	(17)
五常县牯牛河流域一水田区大骨节病发病动态调查报告(1970)	(25)
大骨节病、克山病与粮食种类的关系(1971)	
——1965—1971年流行病学调查总结	(31)
林口县虎山大队克山病及大骨节病流行病学调查(1972)	
——病区粮食是传播克山病、大骨节病致病因子的基本途径.....	(36)
宁安县镜泊湖公社湾沟大队大骨节病流行病学调查(1973)	(37)
国库粮和病区自产粮玉米致大骨节病差异性的研究(1980)	(40)
关于大骨节病致病因子传播途径的报告(1989)	(43)
大骨节病不同类型病区共同环境因素的流行病学考察报告(1990)	(48)
大骨节病儿童切身生活条件的病例对照调查(1992)	(52)
大骨节病病因流行病学研究实例序列(1997)	
——1965~1995	(58)
第二部分 大骨节病的诊断与病区类型的划分	(74)
关于大骨节病区病情活跃程度指数与病情严重程度指数的研究(1980)	(76)
大骨节病区除掉病因后学龄儿童手骨干骺端改变检出率变动趋势的 数学模型及其应用(1980)	(82)
大骨节病区病情活跃程度指数与病情严重程度指数相关图的意义与应用(1980)	(86)
关于大骨节病活跃病区的概念以及病区分型的问题(1984)	(93)
大骨节病活跃病区概念与应用研究(1993)	(98)
大骨节病诊断标准(1994)	(102)
第三部分 大骨节病儿童体液生化类型与亚临床病例	(115)
大骨节病区学龄儿童尿肌酐的研究(1982)	(116)
关于大骨节病病人尿肌酸、尿肌酐的研究(1982)	(120)
大骨节病区学龄儿童尿羟脯氨酸的研究(1982)	(124)

大骨节病区儿童尿肌酐与尿羟脯氨酸相关性的研究(1982)	(128)
大骨节病早期血液生物化学诊断方法的研究(1983)	(131)
利用尿液生化指标进行大骨节病早期诊断的研究(1984)	(135)
大骨节病儿童尿液生化类型问题研究之二(1984)	(139)
大骨节病生物化学类型的划分及其在诊断与研究病区性质上的应用(1984)	
——血液酶学改变的流行病学研究	(143)
大骨节病生物化学类型的短期动态(1984)	(147)
大骨节病血清酶学生化类型季节性变动的形成过程研究(1985)	(150)
大骨节病血清生化类型与 X 线诊断的关系(1985)	(153)
大骨节病早期血清生化诊断方法研究(1986)	(158)
大骨节病亚临床病例研究(1987)	(161)
大骨节病体液生化类型与早期诊断方法研究(1990)	(166)
第四部分 致病物质的检出、分离	(173)
大骨节病区尚志县玉米受镰刀菌污染情况调查报告(1981)	(175)
化学元素与大骨节病关系的研究(1981)	
——以玉米为主食的病区八种元素与大骨节病病情相关程度的研究	(179)
病区粮食中挥发性盐基氮含量与大骨节病病情相关程度的	
流行病学研究(1981)	(184)
大骨节病区中酚酸类物质色谱图的流行病学研究(1987)	(187)
大骨节病区主食谷物中短碳链脂肪酸谱的流行病学研究(1987)	(190)
大骨节病区谷物中游离氨基酸谱初步观察(1987)	(193)
大骨节病区谷物中四甲基吡嗪的流行病学意义的研究(1987)	(196)
病区谷物中生物碱与大骨节病关系的流行病学研究(1987)	(201)
大骨节病区面粉中 TDP-1 毒素检出情况报告(1987)	(204)
大骨节病区面粉甲醇提取物中异常物质的质谱法观察(1989)	(207)
大骨节病区产大米中苏糖醇检出情况报告(1989)	(210)
大骨节病区面粉中苏糖醇含量的流行病学意义研究(1989)	(212)
四川汉源大骨节病区面粉大米中苏糖醇检出情况报告(1992)	(215)
大骨节病区谷物中两种多元醇的含量与意义(1993)	(219)
关于 Se 与大骨节病关系的解析(1995)	(222)
大骨节病病区病户主食中 T-2 毒素检出报告(1995)	(229)
第五部分 镰刀菌产毒条件研究	(234)
液体培养基中糖、蛋白质含量对尖孢镰刀菌产毒能力的影响(1981)	(236)
蛋白、糖、温度对尖孢镰刀菌菌体发育的影响以及菌体发育水平与	
产毒能力的关系(1981)	(240)
蔗糖、葡萄糖对尖孢镰刀菌产毒能力的不同影响(1981)	(245)
关于在液体培养基中尖孢镰刀菌毒素的毒力强度与挥发性盐基氮含量的	
相关性的研究(1981)	(251)

在不同温度条件下蛋白质、脂肪、糖对尖孢镰刀菌 产生毒素能力的影响(1981)	(255)
关于镰刀菌人工污染谷物发生苏糖醇情况的报告(1989)	(259)
大骨节病区镰刀菌污染谷物产出苏糖醇问题的流行病学意义探讨(1989)	(261)
大骨节病病区谷物镰刀菌产毒问题观察(1994)	(266)
第六部分 镰刀菌毒素(T-2 毒素)致大骨节病的实验病理研究	(269)
尖孢镰刀菌毒素致大骨节病的实验病理学研究(1980)	(271)
关于可引起大白鼠出现类似大骨节病生物化学改变的尖孢镰刀菌毒素的 化学性质的生物学实验研究(1982)	(276)
尖孢镰刀菌(775-3-3 号)毒素致大骨节病作用的 实验生化学研究(二)(1982)	(280)
大骨节病病区玉米致幼鸡骨软骨病(OC)的病理形态观察(1993)	(285)
大骨节病病区谷物镰刀菌培养物致雏鸡骺板软骨坏死的观察(1993)	(289)
镰刀菌 T-2 毒素致鸡雏关节软骨病变观察(1994)	(292)
T-2 毒素对雏鸡软骨及肝脏蛋白质、DNA 合成的抑制(1995)	(295)
T-2 毒素对雏鸡软骨及肝脏 DNA、蛋白质合成的 抑制及药物拮抗作用(1996)	(298)
第七部分 阻断病因链试验和防治措施研究	(302)
关于在大骨节病区采取改旱田为水田措施以消灭大骨节病的建议(1970)	(304)
亚硒酸钠、维生素 E 伍用治疗大骨节病效果观察(1981)	(306)
双鸭山市大骨节病区换粮防病措施效果的流行病学观察(1982)	(309)
大骨节病防治对策的宏观流行病学基础(1987)	(314)
乾县、抚松、双鸭山换粮防治大骨节病效果观察 ——换粮防病历史回顾(1988)	(317)
关于八、五期间全国大部分病区基本控制 大骨节病宏观规划的若干讨论(1989)	(321)
种水田主食大米控制大骨节病研究(1991)	(326)
苏联赤塔大骨节病区流行病学考察报告(1991)	(333)
中国大骨节病防治策略(1997)	(336)
第八部分 病因研究的总结与阶段总结	(340)
大骨节病病因研究阶段总结(1973)	(343)
大骨节病研究进展(1982)	(348)
镰刀菌毒素致大骨节病问题研究的进展(1983)	(354)
大骨节病病因—流行病学研究进展(1984)	(358)
大骨节病病因和阻断措施研究(1989)	(362)
镰刀菌毒素致大骨节病研究进展(1994)	(372)
大骨节病病因研究报告(1995)	(376)
大骨节病发病与流行机制的研究(1998)	(381)

第九部分 全国大骨节病病情监测	(390)
全国大骨节病病情监测摘要(1991)	(392)
全国大骨节病病情监测结果分析汇报(1991)	(399)
1992 年全国大骨节病病情监测(1992)	(405)
1993 年全国大骨节病病情监测(1993)	(409)
全国大骨节病病情监测(1990—1994)(1995)	(412)
1996 年全国大骨节病病情监测报告(1996)	(418)
1997 年全国大骨节病病情监测总结(1997)	(421)
1998 年全国大骨节病病情监测总结(1998)	(425)
附录 关于方法论的考虑	(431)
大骨节病研究中的一些新概念(1986)	(432)
大骨节病现场防治实验设计问题(1987)	(434)
答“大骨节病病因真的是 T-2 毒素吗?”一文作者,并阐明 我们的一些观点(1998)	(439)
病因研究方法论概要(1998)	(446)

Contents

(Boldface's topics in the contents of the book express important papers)

Part 1 On-the-spot epidemiological survey	(1)
Report of first epidemiological survey on KBD(1966)	(3)
Report of second epidemiological survey on KBD(1970)	(17)
Investigative report of KBD trends in paddy field of Mangniuhe area in Wuchang county(1970)	(25)
Relationship between KBD, Keshan disease and kinds of grains(1971)	(31)
Report of epidemiological survey on Keshan disease and KBD in Hushan productive brigade of Linkou county(1972)	(36)
Report of epidemiological survey on KBD in Wangou productive brigade of Jingbohu people's commune of Ningan country(1973)	(37)
Discrepant research between the grain coming from national depot and the grain produced in diseased areas(1980)	(40)
The Report on transmission path of disease-causing agent of Kaschin Beck disease(1989)	(43)
Epidemiological investigation report of common environmental conditions in different types of KBD areas(1990)	(48)
A case-control study on living conditions related with children of KBD(1992)	(52)
Alignment of practical example found in causal epidemiologic studies of Kaschin-Beck disease(1997)	(58)
Part 2 Diagnosis of KBD and type of KBD areas	(74)
Studying on KBD active and severe indexes(1980)	(76)
Mathematics model and its application of changing trend of school age children's hand bone metaphyses after getting rid of disease causing agents(1980)	(82)
Meaning and application of correlation chart between active and severe indexes in KBD areas(1980)	(86)
A concept about KBD active areas and type of KBD areas(1984)	(93)
Concept of KBD active area and its application(1993)	(98)
Diagnostic Criterion for Kashin - Beck Disease (1994)	(102)
Part 3 Body fluid biochemical type and the subclinic cases of KBD	

children	(115)
Studying on urinous creatinine of children of school	
age in KBD areas(1982)	(116)
Studying on urinous creatin and creatinine of KBD patients(1982)	(120)
Studying on urinous hydroxyproline of children of school	
age in KBD areas(1982)	(124)
Studying on relationship between children's urinous creatinine	
and hydroxyproline in KBD areas(1982)	(128)
Studying on blood biochemical diagnostic method of early KBD(1983)	(131)
Studying on the diagnosis of early KBD using urinous	
biochemical indexes(1984)	(135)
Studying on urinous biochemical type of KBD children(2)(1984)	(139)
Biochemical type of KBD and its application in diagnosis of KBD areas(1984)	(143)
A short-term trends in biochemical type of KBD(1984)	(147)
Studying on the process of seasonal variation of biochemical	
type of serum enzymology of KBD(1985)	(150)
Relationship between serum biochemical type and X-ray	
diagnosis of KBD(1985)	(153)
Studying on serum biochemical diagnostic method of early KBD(1986)	(158)
Studying on pre-clinical cases of KBD(1987)	(161)
Studying on biochemical type of body fluid and diagnostic	
method of early stage for Kaschin-Beck disease(1990)	(166)
Part 4 Detection and isolation of diseases-causing agents	(173)
Investigation report of maize polluted by Fusarium in Shangzhi county	
of KBD areas(1981)	(175)
Studying on the relationship between chemical elements and KBD (2)(1981)	(179)
Epidemiological study on the correlation between the content of volatile basic	
nitrogen in grain of diseased areas and KBD states(1981)	(184)
Epidemiological study on chromatogram of phenol acid substance in KBD	
areas(1987)	(187)
Epidemiological study on short-carbon-chain fatty acid chromatogram in staple	
cereals of KBD areas(1987)	(190)
Preliminary observation on free amino acid chromatogram in cereals of	
KBD areas(1987)	(193)
Studying on epidemiological meaning of 4-methyl-pyrazine in cereals of	
KBD areas(1987)	(196)
Epidemiological study on the relationship between biological base in cereals	
of KBD areas and Kaschin-Beck disease(1987)	(201)

An assay report of TDP-1 in wheat flour of KBD areas(1987)	(204)
GC-MS observation of abnormal substance in methanol extraction of wheat flour in KBD areas(1989)	(207)
A report of threitol content in rice in KBD areas(1989)	(210)
Epidemiological meaning of threitol content in wheat flour of KBD areas(1989)	(212)
An assay report of threitol in wheat flour and rice in Hanyuan KBD areas of Sichuan province(1992)	(215)
The content of two polybasic alcohol and their meaning in cereal of KBD areas(1993)	(219)
Analysis of the relationship between Selenium and KBD (1995).....	(222)
Determination of T-2 toxin in the staple food from the sick families in KBD areas	(229)
Part 5 Research on toxin production condition of Fusarium	(234)
Effect of sugar and protein content in liquid culture medium on toxin production ability of Fusarium Oxysporum(1981)	(236)
Effect of protein, sugar, temperature on development of Fusarium oxysporum as well as the relationship between the development of Fusarium oxysporum and toxin producing ability(1981)	(240)
Different effect of sucrose, glucose on the ability of toxin production of Fusarium Oxysporum(1981)	(245)
Studying on correlation between toxicity intensity of Fusarium Oxysporum in liquid culture medium and volatile basic nitrogen(1981)	(251)
Effect of protein, fat, sugar on the ability of toxin production of Fusarium Oxysporum under different temperature(1981)	(255)
A report about threitol content in cereal infected artificially by Fusarium (1989)	(259)
Discussion of epidemiologic meaning on threitol Content in cereal infected by Fusarium in KBD area(1989)	(261)
Observation on mycotoxin-problem of fusarium produced in maize of Kaschin-Beck disease area(1994)	(266)
Part 6 Experimental pathology of KBD caused by Fusarium toxin (T-2 toxin)	(269)
Experimental pathological study on KBD caused by Fusarium oxysporum toxin (1980)	(271)
Studying on the biological experiment of Fusarium Oxysporum toxin which can induce rat to present KBD-like biochemical changes(1982)	(276)
Experimental biochemical study on KBD caused by Fusarium Oxysporum	

toxin(2)(1982)	(280)
Morphogenesis of osteochondrosis (OC) in broiler chickens fed with maize	
flour of KBD areas(1993)	(285)
The observation on the culture of Fusarium isolated from the cereal produced in	
human-KBD areas causing cartilage necrosis of growth plate in broiler	
chickens(1993)	(289)
Observation on T-2 toxin causing younger chickens to suffer from multiple	
necrosis in the cartilage of knee joint(1994).....	(292)
In vivo inhibitory effect of T-2 toxin on synthesis of protein and DNA in broiler chickens	
tissues(1995)	(295)
Protective effects of vitamin C, selenium and vitamin E on inhibition of DNA and protein	
synthesis induced by T-2 toxin in broiler chicken tissue(1996).....	(298)
Part 7 Studies on the experimental block of causal chain and preventive	
methods	(302)
A suggestion of changing dry land into paddy field to eliminate KBD in KBD	
areas(1970)	(304)
An observation of the combination of sodium selenite (Na_2SeO_3) and VE to	
treat KBD(1981)	(306)
An epidemiological observation of exchanging grains to prevent KBD	
in Shuangyashan city(1982)	(309)
Macro-epidemiology bases of KBD preventive strategies(1987)	(314)
An observation of effect of exchanging grains to prevent KBD in Qian county,	
Fusong County and Shuangyashan city-a historic review of exchanging grain to prevent	
KBD(1988)	(317)
Discussion of a macroscopic planning on controlling of KBD in the greater part of	
KBD areas in China during "the eighth five year planning of the nation"(1989) ...	(321)
Studying on the control of KBD by planting paddy field and serving rice as	
staple food(1991)	(326)
Investigation report of KBD in former USSR(1991)	(333)
Study on Chinese strategy for Kaschin-Beck disease control(1997)	(336)
Part 8 Summary and periods summary of etiology research	(340)
Periods summay of the research of KBD causes(1973)	(343)
Progress of KBD research(1982)	(348)
Progress of KBD research on Fusarium Toxin(1983)	(354)
Progress on epidimiologic research of KBD cause(1984)	(358)
Studying on causes of KBD and intervention measure(1989).....	(362)
Progress of KBD research on Fusarium toxin(1994)	(372)

A research report on the etiology of KBD(1995)	(376)
Research on the mechanism in occurrence and prevalence of Kaschin-Beck disease(1998)	(381)
Part 9. National KBD state surveillance	(390)
Abstracts of national KBD state surveillance (1991)	(392)
Analytical report of the results of national KBD state surveillance (1991)	(399)
National KBD state surveillance in 1992(1992)	(405)
National KBD state surveillance in 1993(1993)	(409)
5. National KBD state surveillance in 1990-1994(1995)	(412)
National KBD state surveillance in 1996(1996)	(418)
National KBD state surveillance in 1997(1997)	(421)
National KBD state surveillance in 1998(1998)	(425)
Appendix About Methodology	(431)
Some new concepts in KBD research(1986)	(432)
The experimental design of KBD of on-the-spot prevention(1987)	(434)
Responding to the author of the article entitled “Is it true that T-2 toxin is the cause of KBD”and expounding our viewpoints(1998)	(439)
Outline of methodology in etiological study(1998)	(446)

第一部分 现场流行病学观察

作者于 1965 年受命研究大骨节病病因。当时,大骨节病病情十分严重,对病区人民生产、生活造成极大威胁。有三种病因假设:病区饮用水有机物污染,元素缺乏和谷物真菌中毒。然而仔细检查,没有一个是根据充分的,特别是没有现场流行病学依据;假设多半是建立在片面推测的基础之上,不足以解释自然也不足以说服提出者本人。

大骨节病是典型的地方病,病区之内肯定有特异的病因存在。一个简单的道理是病因必须经过一定途径,借助于某种或某几种载体方可进入人体。环境物质千千万万难以计数,但进入人体的途径在流行病学的理论与实践的规范中,却是历历可数而且有据可查的。对于大骨节病病因来说,其实仅仅存在这样的几种可能:通过食物,通过主食,通过副食,通过饮水,或者食物、饮水都通过,都有关系。这些问题的解决,需要使用流行病学方法。历史上广义的流行病学研究在这些方面积累了充分的经验。

作者和课题组一道,用了 10 年时间,收集到大量的准确事实,比较系统地确认了大骨节病致病因子进入人体的途径及载体问题。主要方法是,寻找自然实验案例,用回顾性前瞻性调查,解释水、粮等每个具体因素的流行病学意义。先后发表论文 11 篇,明确提出了下列概念:①致病因子是通过病区产的谷物进入人体的,与饮水无关;②但是不同种类谷物传病作用不同,小麦、玉米传病,大米不传;③谷物的含水量及贮存条件,对于产毒有重要影响。这些发现对于以后的研究有重要的指导作用,也可以说是关键性的。

Part 1 On - The - Spot Epidemiological Survey

The author received instructions to study causes of KBD in 1965. At that time, KBD was prevailing and endangered people's daily life and production in diseased areas. There were three etiological hypotheses; Drinking water was polluted by organic substances, elements deficiency and cereal fungus intoxication. After careful examination, none of them is based on sufficient facts, especially not based on systematic on - the - spot epidemiological survey. The hypotheses are mostly based on inferring, and can't explain natural phenomena or persuade the persons who raised the hypotheses.

As a typical endemic disease, KBD must have unique causes in diseased areas. It is a simple sense that the disease—causing agents must be entered into human body by carriers in a certain way. Environmental substances are numerous, but the ways in which they enter into human body are fixed and can be found epidemiologically. As for KBD, in fact there are only few possibilities: by food, by staple food, by subsidiary food, by drinking water, or by both food and water. To solve these problems, one should use epidemiological methods. General epidemiology accumulated much experi-