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# Oral Contraceptives and Death from Myocardial Infarction

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## Summary

We investigated 219 deaths from myocardial infarction in women under the age of 50. Their histories were compared with those of living age-matched controls selected from the same general practices. The frequency of use of oral contraceptives during the month before death was significantly greater in the group with infarction than during the corresponding month in the control group and the average duration of use was longer. No information on cigarette smoking was available but the proportion of women being treated for hypertension or diabetes was greater among those who died than among the controls. This did not alter the overall conclusion that the risk of fatal myocardial infarction was greater in the women using oral contraceptives, particularly in the older age groups.

## Introduction

Inman and Vessey's report to the Committee on Safety of Drugs on deaths from pulmonary embolism and coronary and cerebral thrombosis in women of childbearing age was published in 1968.<sup>1</sup> In the cases of pulmonary embolism and cerebral thrombosis a strong relationship was found with the use of oral contraceptives when these disorders occurred in the absence of predisposing conditions. More of the women who died from coronary thrombosis in the absence of predisposing conditions had also been using oral contraceptives than would have been expected from the experience of the control group, but for this condition the difference was not quite significant and a definite association was considered not proved. Later studies<sup>2,3</sup> were not conclusive and we thought it desirable to undertake a further investigation of deaths from myocardial infarction in 1973.

## Selection of Cases

Transcripts of all death certificates relating to women under the age of 50 years who died in England and Wales during 1973 and which

had been coded to rubric 410 according to the eighth revision of the International Classification of Diseases (myocardial infarction and synonymous terms) were obtained from the Registrar General. A total of 726 were received. All deaths in women under the age of 40 years, every second death in the 40-44-year age group, and every fifth death in the 45-49-year age group were selected for the study, giving a total of 277 cases (table I). Selection was made consecutively as batches of certificates were received.

TABLE I—Numbers of Death Certificates Received, Selected for Study, Investigated, and Included in Present Analysis

Age group (years):	<40	40-44	45-49	Total
No. of death certificates received ..	86	192	448	726
No. selected for study ..	86	100	91	277
No. investigated ..	73	79	67	219
No. included in analysis* ..	51 (81)	54 (56)	48 (59)	153 (196)

\*Numbers of control patients are given in parentheses.

Efforts were made to interview the general practitioners who had cared for the patients. In 15 cases either the women were not registered with any doctor or the coroner, hospital, or local executive council could not identify him, and the medical records of nine women had been lost and no other data source was available. A further 34 deaths were not investigated because the general practitioner could not be interviewed. Thus 58 (21%) of the 277 deaths could not be studied.

The remaining 219 deaths were investigated by the committee's medical field officers, as a result of which a further 66 cases were excluded. In 37 cases evidence for the diagnosis of myocardial infarction was thought to be inadequate. Deaths were included in the final analysis only when the diagnosis was substantiated by necropsy findings or a history of typical chest pain together with electrocardiographic or enzymatic confirmation as defined by the World Health Organization.<sup>4</sup> In 23 cases (10.5%) a necropsy carried out after the death certificate had been completed or (less often) other evidence suggested that death was attributable to a different cause. A further six cases were excluded because the wrong sex, age, or year of death had been given on the certificate. The remaining 153 deaths provide the basis for this report. In 104 cases the diagnosis was substantiated at necropsy.

## Procedure

Forty-eight members of the committee's staff of medical officers took part in the field work. During the investigation of each death one of them completed a questionnaire as fully as possible with the aid of the general practitioner and any other doctors who had attended the patient during her terminal illness. Since the general practitioner's records had usually been returned to the local executive council after the patient's death he was asked to retrieve them before being interviewed. These major sources of information were often supplemented by hospital case notes, family planning clinic records, necropsy reports, and court records supplied by a coroner.

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