

creased incidence of disorders of blood vessels and blood clotting. There is evidence that blood clotting mechanisms, constituents of the blood, and possibly blood vessel walls are or can be altered by contraceptive steroids.

There is, further, the conviction on the part of many cautious and experienced clinicians that strokes are now more frequently seen in young women taking the pill. I think one can summarize as follows: First, there does seem to be a relationship between the taking of currently used oral contraceptives—the pill—and the evolution of a strokelike syndrome or a frank stroke.

Second, it is regrettable that no effective system of reporting possible complications is in operation to give at least a fairly accurate idea of the number of cases occurring in a large population in a prospective rather than retrospective sense.

Third, the strokes themselves usually involve arteries rather than veins, though both may be affected. They do not seem to require pre-existing disease of the arteries, such as arteriosclerosis, to develop, though such may contribute, especially in the older women.

Fourth, the most acceptable evidence at present suggests that the strokes related to taking the pill are brought about either by changes in the chemical and enzymatic composition of the blood, or by intracellular changes in the vessel walls, or possibly by both.

Fifth, since the actual incidence of such strokes is not known, mortality cannot be estimated accurately. A rough estimate based on publications suggests about 15 percent.

Sixth, as far as can be estimated at present, the prognosis for a good or virtually complete recovery in the survivors is at least 50 percent.

Seventh, there is reason to believe that women with hypertension or with a previous history of occlusive disorders of blood vessels are more at risk. Certainly, any woman taking the drugs who begins to have migrainous headaches, in whom previously present migraine is worsened or who experiences any disturbance of speech, vision, motor coordination, or sensation, should stop the drugs at once.

Thank you, sir.

(The complete prepared statement and supplemental information submitted by Dr. Clark follows:)

STATEMENT OF DR. DAVID B. CLARK, PROFESSOR OF NEUROLOGY, UNIVERSITY OF KENTUCKY MEDICAL CENTER, LEXINGTON, KY.

I should like at outset to make a few points clear. *First*, with regard to myself and my own qualifications, I am a neurologist. My area of clinical competence lies in the disorders of the nervous system. I am neither an obstetrician, an endocrinologist, an internist, an epidemiologist, nor a statistician. I shall therefore restrict my comments to the question of neurological disorders possibly related to the taking of oral contraceptive agents, and specifically to strokes. My material is derived from my own cases, those referred to me by other physicians, and from the now extensive literature on the question.

*Second*, with regard to the drugs under discussion. The oral contraceptive agents are for practical purposes, combinations of a progestogen and an estrogen, originally given together, now in some instances given sequentially; sequential administration is a relatively recent development, and most of the material I shall discuss derives from those cases in which estrogen and progestogen were given together.

These are potent drugs. It is an axiom of therapeutics, which every physician must learn sooner or later, that any drug potent enough to have desirable thera-