BLADDER CANCER AND THE CONSUMPTION OF ALCOHOLIC BEVERAGES IN SPAIN

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The relationship between bladder cancer and alcohol consumption was investigated in a case-control study conducted in 506 patients (453 males and 53 females) with diagnoses of papillary urothelial carcinoma during 1978-1982 at «La Paz» hospital (Madrid), and an equal number of controls matched for age, sex and date of admission to the hospital. The results showed that the risk of bladder cancer does not increase with the intake of beer, wine and spirit beverages. However, a high risk of bladder cancer was associated with consumption of wine mixed with «gaseosa» (a refreshment beverage consisting of carbonated water plus artificial sweeteners).

INTRODUCTION

The association between bladder cancer and consumption of substances such as coffee and artificial sweeteners has been studied in considerable depth (6, 7, 8, 11, 12, 25). However, little attention has been devoted to the possible effects of alcohol consumption on bladder cancer. Most of these studies have failed to find any association (10, 13, 16, 26, 30). However, an increased risk of bladder cancer associated with alcoholic beverage intake has been reported in smokers but not in non-smokers, suggesting a synergistic effect (23).

Ethanol probably acts as a carcinogen on tissues with which it comes into direct contact, such as the mucosa of the digestive tract (2, 9, 23, 28, 29) and the liver parenchyma (12). In addition, ethanol seems to enhance the risk of cancer in other tissues such as the breast (21) and pancreas (5). This synergistic effect of alcohol has been explained by three mechanisms: a) alcohol may serve as a solvent for carcinogens (23), b) alcoholic beverages may be contaminated with carcinogenic impurities (20), and c) nutritional deficiencies may be associated with alcohol use (18).

Since about 2% of alcohol ingested is excreted in the urine (14) the mucosa of the bladder is directly exposed to ethanol and is also subject to some of the above-mentioned indirect mechanisms.

This report describes a case-control study on the effects of consumption of alcoholic beverages (some combined with a refreshment beverage known as «gaseosa») on bladder cancer in Spain.

MATERIALS AND METHODS

The case-group consisted of 506 patients (453 males and 53 females) who were diagnosed as suffering from papillary urothelial carcinoma at «La Paz» hospital (Madrid, Spain) in 1978-1982. The control-group included an equal number of
individuals from the same hospital, whose diseases
were neither malignant nor benign tumors nor
diseases assumed to be related to bladder cancer,
such as cirrhosis or urologic diseases. The con-
trols were matched for age (year of age ± 0.5),
sex and date of admission to the hospital, and
selected through random sample. The data
related to social class have previously been re-
ported (1); no association between bladder cancer
and any social class was found (Table 1). The
percentage distributions of the patients and con-
trols into different social classes were similar
to those found in the normal Spanish popula-
tion within these age groups.

The questionnaire included questions on the
use of coffee and other drinks, artificial sweet-
eners, cigarette smoking, and occupational and
residential histories. The questions on consump-
tion of alcoholic beverages were placed in the
middle of the questionnaire, immediately after
questions on a variety of non-alcoholic beverages.
The subjects were asked to estimate separately
the number of servings of 1) beer, 2) spirits,
3) wine, and 4) wine mixed with gaseosa (50% of
each beverage) consumed in a typical week
during the winter one year previously. "Gaseosa"
is a frequently consumed refreshment beverage
in Spain and consists of carbonated water plus
artificial sweeteners. A serving was defined as a
can, bottle or draught of beer, a 44.4 ml (1.5-ounce)
jigger of spirits, a 118.3 ml (4-ounce) glass of wine,
and 236.6 ml (8-ounce) glass of wine mixed with
gaseosa. The average alcohol consumption and pat-
terns of drinking over time were also investigated.

The association between alcohol consumption
and bladder cancer was assessed by the BMDP
programs 1D, (27), 2D (7), and 4F (4). To assess
the results the maximum error likelihood accepted
was 5% (P < 0.05).

RESULTS

No significant differences with regard to al-
cohol consumption were found between bladder
cancer patients and controls in males or in females
(Table 2). The minimum number of servings inges-
ted by consumers was 7 servings per week.

The relationship between bladder cancer and
amount of alcohol consumed in different age
groups of males is shown in Table 3. Since the
number of female alcohol consumers was low in
both the bladder cancer and control groups, the
classification of alcohol consumers into categories
could not be established for females. A significant
association between bladder cancer and alcohol
consumption was found, only in the group of males
younger than 60 years of age who consumed more
than 41 servings/week.

The same results were obtained when the years
of alcohol consumption in different age groups
were studied (Table 4).

The stratification of male bladder cancer pa-
tients and their controls in relation to the number
of cigarettes and the amount of alcohol consumed
weekly showed no association between bladder
cancer and alcohol consumption in smokers (Ta-
ble 5). No association was observed when the
alcohol drinking and non-drinking male patients
and their controls were stratified according to
years of smoking (Table 6).