A Comparison of Epidemiologic Patterns of Primary Liver and Intrahepatic Bile Duct Cancer in Massachusetts and Israel, 2002-2012
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OBJECTIVE: To compare the epidemiology of primary invasive liver cancer in Massachusetts with Israel-2012

Data Source: Massachusetts Cancer Registry (MCR), Massachusetts Department of Public Health

What is Primary Liver and Intrahepatic Bile Duct Cancer?
American Cancer Society’s Liver Cancer Overview

- The liver is the largest organ in the body and performs many functions including breakdown and storage of nutrients, production of blood cells, production of bile to help absorb nutrients from the intestine, and detoxification of the body. The liver is a common metastatic site for cancers originating elsewhere (colon, breast, prostate). These are secondary liver cancers.

- Primary liver cancer originates in the liver in the hepatocytes or is known as hepatocellular carcinoma. Intrahepatic bile duct cancer, occurring for 10-20% of liver cancers originating in the ducts that carry bile from the liver to the gallbladder and intestines.

- Risk factors include being male, being infected with hepatitis B and C, heavy alcohol use, and liver cirrhosis.

- There are areas of the world such as Southeast Asia, sub-Saharan Africa, and the Middle East where hepatitis B is endemic and there is a greater incidence of liver cancer.

Background:
- While geographically distant, Israel and Massachusetts are similar in size and population.
- By state ranking, Massachusetts has the 3rd highest Jewish population in the United States (4.0%) and, like Israel, has a growing immigrant population.
- The Massachusetts Cancer Registry in collaboration with the Israel Cancer Registry examined patterns of liver and intrahepatic cancer from 2002-2012 as well as patterns of risk factors, such as hepatitis B and C infection and injection drug use.

Demographics – Israel and Massachusetts, 2013

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(Israel) 2000-2006

While Massachusetts with population also are available, the Israeli limited available information for the end period. Population data is provided in the tables. Overall, measures were consistent with the APC 1.0:

- Incidence rates for both males and females in Massachusetts increased significantly from 2002-2012 (APC=3.9 and APC=3.6, respectively). There were no changes in Israel.

- While there were significant increases in trends for 2 of the 4 main racial/ethnic groups in Massachusetts (white, non-Hispanic (APC=6.5) and black, non-Hispanic (APC=3.3), there were no significant changes for the 2 main racial/ethnic groups in Israel (Jews and Arabs).

- While mortality rates increased significantly in Massachusetts from 2002-2010 (APC=4.6) and then remained stable from 2010-2012 (APC=4.1), the mortality rates remained stable in Israel (APC=-0.8).

- In both male and female, the mean incidence rate from 2002-2012 among males was two to three times the rate among females. When comparing the two areas by sex, Massachusetts males and females had higher incidence rates compared to Israeli males and females.

CONCLUSIONS:
- The incidence of liver cancer is higher in Massachusetts than in Israel.
- While there were significant increases in liver cancer incidence and mortality during 2002-2012 in Massachusetts, there were no increases in Israel.
- Massachusetts is more geographically diverse than Israel, and the presence of multiple ethnicities and languages may affect cancer incidence and mortality.
- In both countries, males have a higher incidence of hepatitis C drug use, higher rates of hepatitis A and C and higher rates of liver cancer.

Prevention strategies are already in place in Massachusetts and Israel:
- Can be more effective to stop cholangitits
- Screening of inmates and high-risk populations
- Appropriate treatment of hepatitis, better health monitoring of patients infected with hepatitis, and
- Hepatitis B vaccination of all children.

Current Projects:
- Massachusetts has led the state-wide registry to develop and test the hepatitis B vaccine among high-risk populations and the association between hepatitis B vaccination and liver cancer.

References:
- Massachusetts Cancer Registry (MCR), Massachusetts Department of Public Health
- Israel National Cancer Registry (ICR), Ministry of Health, Israel