

correlate the presence of a symptomatic melanoma with less favorable survival proved unsuccessful in this series.

No obvious differences were discernible between the different groups regarding the disease-free interval in patients who died of melanoma.

(First the definitions: Stage I melanoma means localized to the primary site; Stage II means that metastases are limited to the regional lymph nodes. The prognosis for Stage I melanoma is 84 per cent survival and seems to be unaffected by pregnancy. From the results of this study one can conclude that a patient treated for Stage I melanoma need not fear that pregnancy, present or future, or that the use of the contraceptive steroids will adversely affect her prognosis after surgical excision of the lesion.

For Stage II lesions the 5-year cure rate is but 42 per cent and analysis of the data appears to indicate that pregnancy had an adverse effect on survival rates of patients treated for Stage II melanoma. There are no good experimental or clinical studies available to indicate how pregnancy exercises its effects on the growth of melanoma cells. The evidence is statistical and circumstantial and not a proven hormonal effect from pregnancy which worsens the prognosis. On the basis of these findings, a patient having been treated for a Stage II melanoma would do well to avoid future pregnancies. Neither would I recommend the use of contraceptive steroids for her because of the potential hormonal stimulation of residual melanoma. There is no evidence that elective termination of pregnancy affects the prognosis for either Stage I or Stage II disease, if the patient develops a lesion during pregnancy.—Ed.)

## SPORADIC PUERPERAL MASTITIS

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In July, 1971, all physicians and triage personnel were requested to refer actual or suspected breast infections to the Department of Obstetrics and Gynecology for evaluation. Criteria for the diagnosis of puerperal mastitis were a red, tender area in the breasts and oral temperature  $\geq 38$  C. (100.4 F.).

During the 26 months ending August 31, 1973, a total of 2534 of the 5155 women who delivered infants at the above medical center elected breast feeding. In this time span, 65 separate cases of acute puerperal mastitis were diagnosed in 61 women (2.5 per cent of mothers who elected nursing). Three of the 65 infections resulted in breast abscess (4.6 per cent).

The average interval between delivery and infec-

tion was 5½ weeks (5 days to one year). Milk stasis secondary to weaning or missed feeding preceded 9 of the 65 infections; in 8 women the nipple of the involved breast was fissured. There was no apparent cause in the remainder of the group.

The onset of symptoms was usually abrupt, with chills and breast soreness. Although most patients were mildly ill, temperature as high as 38.8 C (102 F.) was not unusual. A patient whose temperature was 40 C. (104 F.) was hospitalized, responded rapidly to intravenously administered penicillin, and was able to resume nursing her infant. Forty-one patients were treated with penicillin V, 12 with ampicillin, and 8 with other antibiotics. Most patients became afebrile and

TABLE 1

*Bacterial Isolates and Colony Counts From the Breast Milk of 19 Lactating Women Without Mastitis*

Bacterium	No. of Positive Specimens	Colonies/ml of Milk
Right Breast		
<i>Staphylococcus epidermidis</i>	10	100-50,000
Diphtheroids	5	100-5,000
$\alpha$ -Hemolytic <i>Streptococcus</i>	4	300-5,000
Nonhemolytic <i>Streptococcus</i>	2	800-50,000
<i>S. aureus</i>	1	100
No organism	6	
Left Breast		
<i>Staphylococcus epidermidis</i>	12	300-5,000
Diphtheroids	2	1,200-5,000
$\alpha$ -Hemolytic <i>Streptococcus</i>	5	400-10,000
Nonhemolytic <i>Streptococcus</i>	1	6,800
<i>S. aureus</i>	0	—
No organism	4	—

TABLE 2

*Bacterial Isolates From Breast Milk During Sporadic Puerperal Mastitis*

Bacterium	Infected Breast (n = 48)	Contra-lateral Breast (n = 45)
<i>Staphylococcus epidermidis</i>	32	27
<i>S. aureus</i>	23	17
$\alpha$ -Hemolytic <i>Streptococcus</i>	4	6
Hemolytic <i>Streptococcus</i> , neither group A nor group D	3	2
Diphtheroids	2	2
Group A $\beta$ -hemolytic <i>Streptococcus</i>	1	0
Enterococcus	1	0
Nonhemolytic <i>Streptococcus</i>	0	1
<i>Lactobacillus</i>	0	1
No growth	0	4

asymptomatic 36 to 48 hours after beginning treatment.

Forty-one women continued lactation for an average of 13 weeks after onset of infection. Fifteen weaned their infants, and 5 patients could not be reached for follow-up. Mastitis recurred in 4 women who continued to nurse. The three breast abscesses occurred among the 15 who elected weaning.

The results of bilateral breast milk cultures and colony counts in 19 lactating women without

mastitis are shown in Table 1. Culture results from patients with mastitis are listed in Table 2. In both groups of patients, bacteria isolated from the breasts of a given individual tended to be similar. Specimens for culture could not be obtained from 13 infected breasts because of inability to express a free flow of milk. The disk method showed resistance to penicillin and ampicillin in 12 of the 23 *Staphylococcus aureus* isolates from infected breasts; but there were no treatment failures from penicillin or ampicillin in any of the 12 women.

(This report will come as a surprise to many. Most of us have taught and practiced that mastitis is a cause to rest the affected breast until the infection is successfully controlled. The patient is usually instructed to continue nursing on the opposite side but to avoid nursing on the side involved. This procedure is based on the concept that rest and penicillin are the keys to successful treatment of puerperal mastitis and prevention of abscess formation. The authors take the opposite point of view—continue nursing the infant, treat with penicillin, and expect good results. Some of the younger men in our department have been having their patients follow this advice for the past 2 or 3 years, and I have been surprised to observe that it works. It worked well for the patients who were part of this study. The only abscesses that occurred were among those patients who weaned their infants when unilateral mastitis appeared.

It should be emphasized, as the authors have, that sporadic puerperal mastitis here discussed is a different disease from epidemic mastitis. The latter involves the glandular part of the breast, is usually hospital-acquired, may cause abscess

formation, and may induce serious illness to the infant from highly contagious and pathogenic staphylococci. In cases of epidemic mastitis, the infant should be removed from breast feeding and lactation should be terminated as part of clinical management.—Ed.)

## THE USE OF SURGERY TO AVOID CHILDBEARING AMONG NAVAJO AND HOPI INDIANS

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The Hopi and Navajo Indians have lived as neighbors in Northern Arizona for several centuries but have made very different adaptations to the same setting. Hopis are sedentary agriculturists living in villages on or at the base of three mesas where sufficient water has been available to permit subsistence farming. The village of Moenkopi, 50 miles from the main reservation, was originally a summer farming colony and is now inhabited year round. By way of contrast, the Navajos are semi-sedentary pastoralists living in scattered family groups on a large reservation surrounding both Moenkopi and the Hopi Reservation. The Navajo population numbers about 130,000 on reservation in contrast to 5,000 or so reservation resident Hopis. Since the beginning of the reservation period about a century ago, the Navajo population has grown at a faster rate than the Hopi, and this has been attributed to differences in mortality rather than fertility for the period ending shortly after World War II. During that period, fertility in each tribe seems to have been equally high; since then mortality has dropped rapidly for both, but Hopi fertility has declined much more sharply than Navajo.

The data in this study come from two different sources—first, computer tapes of all discharges from the Indian Health Service during the years 1972 and 1973, and from the Commission on Professional and Hospital Activities from the Professional Activity Survey (P.A.S.) for 1971.

When deliveries were divided into normal, without complications versus all complicated deliveries, it was found that Hopis and Navajos have

about the same rate of uncomplicated deliveries (62.5 and 60.0 per cent, respectively) and are both slightly lower than the P.A.S. population (68.7 per cent).

The number of induced and spontaneous abortions are shown in Table 1. The rate of induced abortions per 1000 pregnancies is virtually identical for each tribe, but the age specific patterns clearly differ. Navajos have a relatively constant rate over all age groups whereas the rate for Hopis rises dramatically in the age group 40 and above.

The overall rate of spontaneous abortions is somewhat lower for Hopis than Navajos though, again, women in the oldest age group have a much higher rate. Combining the rates, it was found that a third of pregnancies to Hopi women above the age of 40 are terminated by abortion, either spontaneous or induced. Because the numbers are so small, there is room for considerable random fluctuation from year to year.

TABLE 1  
*Induced and Spontaneous Abortions per 1,000 Pregnancies, by Age: (primary, secondary, tertiary diagnoses combined)*

Age	Induced		Spontaneous	
	Navajo	Hopi	Navajo	Hopi
0-19	53.1	26.3	24.7	35.1
20-39	34.1	34.9	46.7	19.0
40-49	60.9	222.2	55.2	111.1
Total	40.6	40.2	44.4	26.9