The Conundrum of Colds in the Corps

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(See the article by O’Shea et al. on pages 311–7)

A tax that’s laid on all
by microbes’ ancient wills
Without regard to worth or birth,
to wage or age,
Is still the scourge
of respiratory ills.

It seems a paradox that one of our healthiest populations, young and active adults, can be at high risk for respiratory illnesses with unusual severity. Yet such appears to be the case when these young and fit individuals enter military training, as was well demonstrated during World War II. The outbreaks of devastating illnesses that erupted among the new trainees, which resulted in an interruption of their training and strategically important deployment, highlighted the importance of this epidemiologic observation. In particular, group A β-hemolytic streptococcal infections, with alarming suppurative complications, and infections with adenoviruses swept through training camps and left a trail of marked morbidity and mortality [1–3]. The increased attack rate in this population may be explained in part by living conditions, which augment (or enhance) close exposure to a large number of geographically diverse individuals and organisms. However, the increased severity of these common infections among new recruits remains unexplained.

In their article, O’Shea et al. [4] attest that plagues and pestilence continue to be among the current entrants into basic training. Although the major perpetrators still are the common infections of childhood, they are mostly viral, an observation made possible by today’s advanced laboratory techniques. Illnesses caused by adenovirus are, again, as in the past, the prime cause of morbidity identified in this population, and their incidence may be increasing because of the recent discontinuation of the manufacturing and routine administration to new recruits of the enteric-coated vaccines against adenovirus [5]. The outbreaks of influenza virus infection that occurred among the trainees at Fort Benning may also have resulted from inadequate immunization. Although 99% of trainees had received influenza vaccine, trainees infected with influenza virus had not been immunized or had received the vaccine too late for the development of a sufficiently protective response, and, apparently, also had not received interim chemoprophylaxis.

The importance of respiratory syncytial virus (RSV) in a military population has not been documented previously as well as it has been by O’Shea and colleagues [4]. Their study raises several interesting questions. Are military recruits more susceptible to RSV infection than their civilian counterparts? Does the experience of basic training in the military augment the frequency and severity of RSV infection? If so, what are the conditions that metamorphose these previously young and fit persons into a group at high risk for acquiring more-severe RSV disease?

Because of the marked severity and importance of RSV respiratory disease in young children, comparatively little attention has been paid to RSV’s possible role in adult respiratory illness. The characterization of RSV, however, has recently received a “make-over” that revealed RSV to be an important player on the stage of respiratory illnesses in institutionalized and previously healthy elderly adults [6]. The contribution of RSV to the burden of respiratory infections borne by young and healthy civilian adults also may be considerable, according to the few studies that have examined RSV infection in this group [7–11].

To begin to answer the above questions, the characteristics of RSV infection in the military recruits examined by O’Shea and coworkers [4] would need to be compared with those of RSV infection in healthy civilians of comparable age. But such a comparison is confounded by the different methods used in these studies [4, 7, 8]. For example, a relative estimate of the prevalence of RSV infection in the 2 groups is not possible. Nevertheless, some information on the relative burden and severity of RSV infection in these 2 groups may be gleaned from the reported observations. Most of the studied populations...
of healthy civilian adults included persons who presumably acquired RSV infection nosocomially or as a family member of a young child [7, 8, 11]. Under these circumstances, the rate of infectivity may be ≥40%, emphasizing the facility with which RSV spreads and its ability to cause symptomatic infection in individuals with immunity from previous infections. Of 2960 healthy working adults who were prospectively followed up by examination and viral culture every 2–3 days, 211 (7%) acquired RSV infection, 84% of whom were symptomatic [7]. Among the military trainees studied by O’Shea and colleagues, 11% of cases of respiratory illness were caused by RSV, and that proportion may have been higher because some illnesses may not have been detected serologically, on account of missing convalescent-phase serum samples. All trainees were symptomatic because only ill trainees were tested. Nevertheless, in both military and civilian studies, the RSV infections were moderately severe.

Although 60% of the civilian working adults had no fever, signs of sinusitis were present in 31% of adults, and signs of lower respiratory tract involvement were present in 26% of adults. Compared with the duration of influenza in this same group of individuals, the duration of RSV infection was significantly longer, with an average of 9.5 days [7]. This average duration was also considerably longer than that of RSV illness in military recruits at Fort Benning, who experienced an average disease duration of 4.1 days. Nevertheless, all recruits had fever, with temperatures ranging from 38.2°C to 40.3°C, and illness caused a greater proportion of trainees to be absent from training than it caused civilians to be absent from work (94% of trainees vs. 38% of civilians). In both groups, a considerable proportion of RSV illnesses were accompanied by signs of lower respiratory tract involvement, especially wheezing and prolonged cough. This propensity of RSV to cause illness complicated by wheezing has been observed not only in infants, but also in adults with no known predisposition to hyperreactive Airways [9].

Is RSV infection, therefore, more frequent and severe in military trainees than in their civilian counterparts? These observed differences could well result primarily from the different designs of the studies. The working adults were evaluated once every few days whether they were ill or not; thus mild and asymptomatic infections were detected. The case definition used in the Fort Benning study required the presence of febrile respiratory illness, and not all recruits who reported with such illness agreed to be enrolled. The prevalence of RSV infection, despite the highly sensitive detection by RT-PCR, therefore, was likely to have been greater among military trainees than the prevalence among civilians, and the average severity of RSV infection among trainees was likely to have been less than what is reported. Clear answers to these questions are further confounded by the relatively small number of subjects that were studied.

Nevertheless, the RSV illnesses in the military trainees and in the civilians appear to be more similar than disparate. Thus far, good evidence does not exist that suggests basic training is a higher risk situation for acquisition of RSV infection than is the workplace or a home where children reside. The studies of both groups emphasize that RSV infection is highly contagious, frequent, and often markedly symptomatic in healthy adults. This level of risk suggests that RSV causes an important proportion of acute respiratory disease requiring medical attention in healthy adults, and it imposes an appreciable burden on the resources of our health care system. Currently, this burden is unestimated and unappreciated. In this day of increased cost of and competition for medical resources, more effort, such as that of O’Shea and colleagues, could be well spent in defining and confining the RSV burden in young adults.

Acknowledgment


References